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MATERIA MEDICA AND PHARMACY.

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of the Royal Colleges of Physicians and Surgeons
in England, Scotland and Ireland; the Society
of Apothecaries of London, &c.

BY

DR. RIVERS WILLSON,

Member British Medical Association, Chemical Society of University of Edinburgh; Vice-Pres. Incorp. Medical Pract. Association; Extra-academical Tutor, Oxford; Hon. Medical Referee British Home for Incurables; late Lecturer on Sanitary Science, Berks County Council. Author of "Chemical Physics," "Chemistry."

New Edition.

(In accordance with British Pharmacopœia, 1898.)

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PREFACE.

THE favourable reception accorded to the first volume ("Chemical Physics") in the Conjoint Board Series, encourages me in the belief that my effort to provide small and reliable manuals for Medical Students meets a distinct want. In the present volume the pharmacological actions and therapeutic uses of the drugs have been omitted, as being no longer required by the Conjoint Board in the materia medica examination. These subjects now form part of the third professional examination, and it is proposed to embody them in a separate volume in this Series. The manipulations necessary to the art of dispensing can only be acquired by diligent practical exercises, and I earnestly advise every student, whatever his intentions as to his future kind of practice, to endeavour to obtain a good knowledge of this, at present, much despised accomplishment: without it the physician cannot efficiently prescribe, nor can he, if circumstances need it, safely prepare medicines. The attention of students proceeding to the Licence in Medicine and Surgery of the Society of Apothecaries is directed to pages 126—131, which treat of the additional substances, a knowledge of which is required by the Court of Examiners.

At my suggestion Messrs. Southall Bros. and Barclay, of Birmingham, have prepared a cabinet containing the substances to be recognised, for the use of students who may not have access to a Museum of Materia Medica.

If I have succeeded in making less difficult the path of the student in this unattractive, but very necessary, subject my object has been attained.

RIVERS WILLSON.

Oxford.

PREFACE TO THE SECOND EDITION.

THIS Edition has been thoroughly revised and brought into conformity with the New British Pharmacopœia. The plan of the book remains unaltered, and it has not been found necessary to increase its bulk.

R. W.

MATERIA MEDICA AND PHARMACY.

DEFINITIONS OF SOME PHARMACEUTICAL TERMS AND PROCESSES.

Materia Medica is the term used to denote the substances employed in medicine, their sources, physical characters, chemical properties, the preparations made from them, and the doses in which they are usually administered. Those substances which are described in the British Pharmacopœia (a book issued by the General Medical Council by authority conferred by the Medical Act of 1858) are called "official," all other drugs are "non-official"

Pharmacy is the art resulting from the application of chemistry and physics to the preparation of substances for administration or application in medicine.

Fixed Oils.—Oils obtained by expression, with or without the aid of heat, from seeds, or fruits, or from animal tissues They consist of Oleic, Palmitic and Stearic Acids in combination with Glyceryl. When boiled with caustic soda or potash they form soap and glycerine. They leave a stain upon paper which is not removed when the paper is warmed. They cannot be distilled without decomposition.

Volatile (or Essential) **Oils.**—Oils obtained by distillation from plants, or parts of plants. (Oil of Lemon, although a volatile oil, is, however, obtained from the peel by pressure, because heat spoils its fragrance.) They consist of a volatile liquid hydrocarbon closely allied to oil of turpentine, called an *elæopten*, and a solid hydrocarbon called a *stearopten*, resembling camphor. Volatile oils do not contain either a fatty acid or glyceryl, and, therefore do not form soap or glycerine with caustic potash or soda. The stain which they make upon paper is entirely removed by heat.

Note.—The fixed oils in the British Pharmacopœia are Olive, Cod Liver, Almond, Castor, Croton Linseed Oils and Oil of Cocoa. All the other official oils are volatile. Oleum Cadinum is not an oil, but Juniper Tar.

Stearoptens are solid crystalline bodies resulting from the oxidation of volatile oils. They are volatile. Camphor, Menthol and Thymol are the official stearoptens.

Resins are solid, brittle substances, also products of the oxidation of volatile oils. They are not volatile, nor crystalline. They are insoluble in water. When boiled with caustic potash or soda they saponify.

Oleo-resins are substances containing both a resin and a volatile oil. Copaiba is an example of this class of bodies.

Balsams are substances containing a resin and either Cinnamic or Benzoic Acid. The Balsams of Peru and Tolu are official examples.

Gums.—Two gums are official, Acacia and Tragacanth; both are exudations from the stems of trees. Acacia consists of Gummate of Calcium, with Magnesium and Potassium; it dissolves freely in water. Tragacanth also consists partly of the same substance, and partly of a body called bassorin. Tragacanth only partly dissolves in water; the bassorin does not dissolve, it merely swells up into a kind of gelatinous mass.

Alkaloids are vegetable or animal principles containing *nitrogen*, which are capable of neutralizing acids to form salts, in the same manner as alkalies. They may be regarded as *compound ammonias*.

Glucosides are *neutral* principles contained in some plants, which when boiled with dilute sulphuric acid yield *grape sugar*, and another substance which is different for each glucoside.

Aceta (Vinegars) are solutions of vegetable or animal principles in Acetic Acid.

Aquæ (Waters) are solutions of volatile oils in water, obtained by distillation. There are two exceptions, Aqua Camphoræ, and Aqua Chloroformi, which do not contain volatile oils and are not prepared by distillation, but by simply dissolving Camphor and Chloroform in water.

Chartæ (Papers). Cartridge paper coated with some active substance.

Confectiones (Confections or Electuaries). Semi-solid jam-like preparations, with a basis of Sugar, Syrup or Honey.

Decocta (Decoctions). Aqueous solutions of vegetable principles, obtained by boiling drugs in water.

Emplastra (Plasters). Solid substances composed of an adhesive basis, with, or without, an active drug, intended to be spread on thin soft leather, calico, or some other fabric, for application to the skin.

Extracta (Extracts). Solid or semi-solid preparations obtained by evaporating solutions of vegetable principles. The solutions are, juices of fresh plants, decoctions, infusions, tinctures prepared with spirit of wine, or tinctures prepared with ether. Extracts are usually classified according to the nature of the solution employed in their production, as follows :—

Aqueous Extracts from decoctions and infusions.

Alcoholic Extracts from tinctures made with spirit of wine.

Ethereal Extracts from tinctures made with ether.

Green Extracts from juices of fresh plants *containing the green colouring matter* (chlorophyll). The British Pharmacopœia gives the following directions for their preparation :—

> "Bruise (the fresh plant or fresh leaves) in a stone mortar, and press out the juice ; heat it gradually to 130° F., and separate the green colouring matter by a calico filter. Heat the strained liquor to 200° F. to coagulate the albumen, and again filter *. Evaporate the filtrate by a water-bath to the consistence of a thin syrup ; add to it the green colouring matter previously separated and passed through a hair sieve ; stir the whole together and evaporate at a temperature not exceeding 140° F., to the consistence of a soft extract."

Fresh Extracts from the juices of fresh plants *not containing green colouring matter*. The juice is allowed to settle ; the clear portion heated to 212° F. and strained, to separate the albumen ; the strained liquid is then evaporated by a water-bath at a temperature not exceeding 160° F. to the consistence of a soft extract.

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* By this second filtration the albumen is separated, and is rejected, as it interferes with the keeping properties of the finished extract.

Liquid Extracts are prepared in much the same ways as extracts, but the evaporation is not carried so far, and where an aqueous solution is used, spirit of wine is afterwards added to preserve the liquid.

Note.—In all cases where solutions of vegetable substances have to be evaporated, the process should be conducted at as low a temperature as is consistent with rapidity of completion. A high temperature, or the prolonged application of heat, results in an inactive product.

Glycerina (Glycerines) are solutions of substances in glycerine.

Infusa (Infusions). Aqueous solutions of vegetable principles obtained by steeping drugs in water. Boiling water is employed in all infusions, except two,—Infusions of Calumba and Quassia with *cold* water. Cold water is used for Calumba so as not to extract the starch from the drug, and for Quassia because it does just as well as hot water. Acid Infusions of Cinchona, and of Roses contain Hydrochloric and Sulphuric Acids respectively.

Note.—The two infusions prepared with cold water do not contain tannin, they are, therefore, the only "official" bitter infusions which can be given with Iron Salts.

Injectiones Hypodermicæ (Hypodermic Injections). Strong aqueous solutions for administration under the skin by means of a syringe and a specially constructed needle.

Lamellæ (Discs). Minute discs of gelatine, with some glycerine containing some active drug, for application to the eyes.

Linimenta (Liniments) Preparations for application to the skin by rubbing in, or painting on.

Liquores (Solutions). Under this name are grouped a variety of liquid preparations which do not fall naturally into any other well-defined class. The following are some of the more important "official" solutions, with their strengths.

Liquor Arsenicalis	1 in 100
,, *Arsenici Hydrochloricus*	
,, *Arsenii et Hydrargyri Iodidi*	
,, *Atropinæ Sulphatis*	
,, *Morphinæ Acetatis*	
,, ,, *Hydrochloridi*	
,, ,, *Tartratis*	
,, *Potassii Permanganatis*	
,, *Sodii Arsenatis*	
,, *Strychninæ Hydrochloridi*	
,, *Trinitrini*	
,, *Hydrargyri Perchloridi*	1 in 875

Lotiones (Lotions). Aqueous preparations for external use by washing, or on lint.

Mellita (Honeys). Honey simply melted and strained, or medicated.

Misturæ (Mixtures). Liquid preparations for internal administration, mostly compound, and mostly containing some insoluble substance in suspension.

Mucilagines (Mucilages). Colloid substances (gums or starch) incorporated with water.

Oxymels.—Preparations containing Acetic Acid and Honey.

Pilulæ (Pills). Plastic compound masses, which when divided and rolled into a globular form retain that shape. They consist of powdered organic or inorganic substances mixed with some natural, or artificially made, tenacious matter, called the "excipient." The excipient may be an active body, such as a medicinal extract, or an inert substance, such as treacle, syrup, syrup of glucose, kaolin and soft paraffin, confection of roses, mucilages, glycerine, &c.

Pulveres (Powders). *Compounds of dry and powdered substances, well mixed by rubbing together in a mortar, and passing through a sieve.

Spiritus (Spirits). Solutions of volatile substances in rectified spirit of wine. They are mostly simple solutions, but some of them, viz.: Spt. Ætheris Compositus, Spt. Ætheris Nitrosi, Spt. Ammoniæ Aromaticus, Spt. Ammoniæ Fœtidus, Spt. Armoraciæ Compositus, are complex; and Spiritus Rectificatus (Rectified Spirit) is Ethylic Alcohol 90 per cent. with 10 per cent. water by volume.

Succi (Juices). Juices of fresh plants preserved by the addition of 25 per cent. of Rectified Spirit. Succus Limonis is not preserved with Spirit.

Suppositoria (Suppositories). Solid conical bodies for introduction into the rectum, consisting of some easily meltable substance (Cocoa Butter, alone or with addition of White Beeswax, or Gelatin and Glycerine) with some active substance. All "official" suppositories weigh 15 grains each, except Suppos. Glycerini, which may weigh 30, 60, or 120 grains each, or such other weight as may be required.

Syrupi (Syrups). Fluid preparations consisting of strong solutions of cane sugar in water, with some medicinal or flavouring substance or substances, except Syrupus (Simple Syrup), which is simply a solution of cane sugar in water, and Syrupus Glucosi, a mixture of Liquid Glucose and Simple Syrup.

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* The word "compound," as used in Pharmacy, does not indicate a substance of definite chemical constitution; it really means "complex," that is to say, two, or more, substances not (in most cases) acting chemically on one another, incorporated (mixed) with one another.

Tincturæ (Tinctures). Alcoholic solutions of medicinal substances. They differ from Spirits in being solutions of non-volatile bodies. The spirit used as a solvent is either Spiritus Rectificatus (90 per cent. alcohol), Diluted Alcohol, Spiritus Ætheris (Ether and Rectified Spirit), or Spirit and Ammonia. If Spt. Ætheris is used the tincture is termed "ethereal" if a mixture of Solution of Ammonia and Spirit, it is an "Ammoniated" Tincture. The processes employed are—

(1) *Simple solution* of the drug in the spirit.

(2) *Maceration* (or soaking) of the drug in spirit, straining, pressing the residue, and making up to a definite quantity with spirit.

(3) *Percolation.* The drug is moistened with some of the liquid and set aside in closed vessel for 24 hours, packed in a cylindrical vessel (usually of glass) called a percolator, and more liquid is poured on, allowed to pass through the drug, and out at the bottom of the vessel, until three-fourths of the required volume of tincture has passed through. The contents of the percolator is submitted to pressure, and the expressed liquid filtered is added to the percolate and made up to the full volume.

Trochisci (Lozenges) are dry tablets consisting of some active medicinal substance incorporated with one or other of the undermentioned Lozenge Bases:—

Fruit Basis—Sugar, Gum Acacia, and Black Currant Paste.

Rose Basis.—Sugar, Gum Acacia, Mucilage of Acacia, and Rose Water.

Simple Basis.—Sugar, Gum Acacia, and Mucilage of Acacia.

Tolu Basis.—Sugar, Gum Acacia, Mucilage of Acacia, and Tincture of Tolu.

Unguenta (Ointments). Semi-solid preparations for external use, having a basis of lard, soft and hard paraffins, oil and wax, suet, spermaceti, oleic acid, wool fat, or combinations of them, with which the active drug is incorporated.

Vina (Wines). Solutions of drugs in sherry, or in orange wine.

Pulverization. The reduction of substances to powder is effected in many ways; on a large scale, in mills; on a small scale by simply pounding with a pestle in a mortar (*trituration*). by rubbing to a smooth paste with a little water (*levigation*), and drying. For separating the fine particles from a mixture of fine and coarse particles of an insoluble substance, *elutriation*, or washing, is often practised; the substance is stirred up with water, allowed to stand till the coarser particles have subsided, and the liquid containing the finer is drawn off into another vessel, and the particles allowed to subside. By repeating the process, only the very finest powder can be obtained. For the degree of comminution necessary for drugs used in the prepara ion of many tinctures, &c., the British Pharmacopœia refers to the use of sieves having 20, 40 and 60 parallel wires of ordinary thickness within a *linear* inch forming the meshes, and the powders which will pass through them are termed No. 20, 40 and 60.

Standardized Preparations are those which are made to contain definite proportions of active constituents. Many powerful vegetable drugs contain very variable proportions of active principles, and the object of standardizing is to minimize the uncertainty which attaches to the use of such drugs.

Weights and Measures[a]. The weights directed by the British Pharmacopœia are the ordinary weights used in commerce (Avoirdupois), viz.:—

437.5 grains = 1 ounce,
16 ounces = 7,000 grains = 1 pound,

and all preparations must be compounded by those weights. But, in directing the use of medicines by *prescription*, medical practitioners in this country always employ Apothecaries' Weights, which (with the symbols indicating them) are as follows:—

20 grains = 1 scruple, ℈j.
3 scruples = 60 grains = 1 drachm, ʒj.
8 drachms = 480 grains = 1 ounce, ℥j.

The grain Avoir. and the grain Apoth. are equal, but, as will be seen, the ounces differ greatly.

The pound Apoth. = 12 ounces, is seldom used.

The Measures directed by the Pharmacopœia and those used in prescriptions are the same,

60 minims = 1 drachm ʒj.
8 drachms = 480 minims = 1 ounce, ℥j.
20 ounces = 9,600 minims = 1 pint, Oj.
8 pints = 1 gallon, Cj.

A fluid ounce of distilled water at 60° F. weighs 1 ounce Avoir. (437.5 grains), but it contains 480 minims, therefore each minim weighs less than a grain. It is convenient to remember that 109 minims practically = 100 grains. Suppose, for example, a one per cent. solution of a substance is required, it would be obtained by taking 1 grain of the substance and adding liquid to make the measure up to 109 minims, and not, as is often erroneously done, to 100 minims.

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[a] Metrical weights and measures may be employed instead of Avoirdupois weights and Imperial Measures.

When prescribing medicines to be taken by measure it is not uncommon to use such terms as a tea- or tablespoonful. These domestic measures are usually supposed to have the following traditional capacities :—

A teaspoonful = 1 drachm.
A dessert-spoonful = 2 drachms.
A tablespoonful = 4 drachms.
A wineglassful = 2 ounces.
A teacupful = 5 ounces.
A tumblerful = 10 ounces.

A little investigation will, however, show that these domestic articles vary greatly, and if any approach to accuracy is required, properly graduated measures are necessary.

INORGANIC MATERIA MEDICA.

*Substances marked * have to be recognised.*

***Iodum** (Iodine).—A non-metallic solid element obtained principally from the ashes of sea-weed, and from native Iodides and Iodates.

Characters.—In laminar crystals of a dark colour and metallic lustre, and of peculiar odour. Sublimes completely when heated.

Solubility.—1 in 7000 of Water. An aqueous solution of Potassium Iodide dissolves it freely. 1 in 65 of Glycerine. 1 in 30 of Chloroform. 1 in 4 of Ether. 1 in 12 of Rectified Spirit.

Dose.—$\frac{1}{16}$ to $\frac{1}{4}$ grain, cautiously increased.

Incompatibles.—Ammonia, Mineral Acids, most Metallic Salts, Alkaloids, Vegetable Tinctures, Infusions, Decoctions, Extracts, &c.

Preparations:—

(1) **Liquor Iodi Fortis.**—Iodine, Iodide of Potassium, Water, and Rectified Spirit.
(1 of Iodine in 8½.

(2) **Tinctura Iodi.**—Iodine, Iodide of Potassium, Water, and Rectified Spirit. (1 of Iodine in 40.)
Dose.—2 to 5 minims.

(3) **Unguentum Iodi.**—Iodine, Iodide of Potassium, Glycerine, and Lard. (1 of Iodine in 25.)

***Sulphur Sublimatum** (Flowers of Sulphur).—Sulphur, prepared from crude sulphur by sublimation.

Characters.—A slightly *gritty* powder of a fine greenish-yellow colour: without taste or odour.

Solubility.—Soluble in Oils and in Oil of Turpentine with heat. Insoluble in Water.

Dose.—20 to 60 grains.

Preparations:—

(1) **Confectio Sulphuris.**—Sublimed Sulphur, Acid Tartrate of Potassium, Tragacanth, Syrup, Tincture of Orange, and Glycerine.

Dose.—1 to 2 drachms.

(2) **Unguentum Sulphuris.**—Sublimed Sulphur and Benzoated Lard.

***Sulphur Præcipitatum** (Milk of Sulphur).—Sulphur, obtained by precipitation as follows:—Boil together Sublimed Sulphur, and Slaked Lime with water; filter, add Hydrochloric Acid to the filtrate, and wash the resulting precipitate of Sulphur till it is free from acidity and from lime salts.

Characters.—A greyish-yellow soft powder *free from grittiness*: without taste or odour.

Solubility: } Same as Sulphur Sublimatum.
Dose: }

Preparation:—

(1) **Trochiscus Sulphuris.**—Precipitated Sulphur, Acid Tartrate of Potassium, Tincture of Orange Peel, Sugar, Gum Acacia, and Mucilage of Acacia.

Dose.—1 to 6 lozenges.

***Phosphorus.**—A non-metallic element obtained by distilling bone-ash with Sulphuric Acid and Charcoal.

Characters.—A semi-transparent, nearly colourless (or slightly yellow) solid; usually in sticks resembling pieces of wax candle. Emits white fumes on exposure to air, is luminous in the dark, and ignites at about 112° F. Is kept under water.

Solubility. Insoluble in Water; soluble in Ether, Oils, Naphtha, Oil of Turpentine, Carbon Disulphide, and Chloroform.

Dose.—$\frac{1}{100}$ to $\frac{1}{20}$ grain, in pill or in solution.

Preparations:—

(1) **Oleum Phosphoratum.**—Phosphorus dissolved in Almond Oil. (1 of Phosphorus in 100.)

Dose.—1 to 5 minims.

(2) **Pilula Phosphori.**—Phosphorus, White Beeswax and Lard, Kaolin, Carbon Bisulphide.

This mixture is kept in a bottle under water, with light excluded. When dispensed it is incorporated with one fourth its weight of Gum Acacia in powder, and the pills varnished. (1 of Phosphorus in 50.)

Dose.—1 to 2 grains.

Acidum Hydrochloricum.—Hydrochloric Acid Gas dissolved in water, and forming 31.79 per cent. of the solution.

The gas is generated from sodium chloride and sulphuric acid, and conducted into water.

Dose.—Given only in the diluted form.

Incompatibles.—All salts of Silver and Lead, Tartar Emetic, Alkalies, all Carbonates and Sulphides.

Preparations:—

(1) **Acidum Hydrochloricum Dilutum.**—Hydrochloric Acid, and Water. (1 in $3\frac{1}{3}$.)

Dose.—5 to 20 minims further diluted.

(2) Acidum Nitro Hydrochloricum Dilutum.—Hydrochloric and Nitric Acids and Water.
Dose.—5 to 20 minims further diluted.

Acidum Nitricum.—Obtained by distilling Sulphuric Acid, Potassium or Sodium Nitrate, and Water. Contains 70 per cent of real nitric acid.

Dose.—Given only in the diluted form.

Incompatibles.—Alkalies, Oxides, Carbonates, Sulphides, Sulphate of Iron, Acetate of Lead.

Preparations :—

(1) Acidum Nitricum Dilutum.—Nitric Acid, and Water. (1 of Acid in 5.)
Dose.—5 to 20 minims further diluted.

(2) Acidum Nitro-Hydrochloricum Dilutum (*vide supra*).

Acidum Sulphuricum.—An acid obtained by the combustion of Sulphur, and the oxidation and hydration of the resulting Sulphur Dioxide, by means of vapours of Nitric Acid and Water. Contains about 98 per cent. of real sulphuric acid.

Dose.—Only given in a diluted form.

Incompatibles.—Alkalies, Carbonates, Oxides, Sulphides, Salts of Lead, Calcium, Strontium and Barium.

Preparations :—

(1) Acidum Sulphuricum Aromaticum.—Sulphuric Acid, Rectified Spirit, Spirit of Cinnamon, and Tincture of Ginger. (1 of Acid in 13.)
Dose.—5 to 20 minims diluted.

(2) Acidum Sulphuricum Dilutum.—Sulphuric Acid, and Water. (1 of Acid in 12.)
Dose.—5 to 20 minims further diluted.

Acidum Sulphurosum.—An aqueous solution cantaining 5 per cent. by weight of Sulphurous Anhydride.

Dose.- 30 to 60 minims well diluted.

Incompatibles.—All preparations of Iodine, Alkalies. Carbonates.

Preparations.—None.

Acidum Boricum—A solid crystalline acid obtained by the action of Sulphuric Acid on Borax, or by purifying natural Boric Acid.

Solubility.—1 in 25 of Water (forming Boric Lotion). 1 in 28 of Rectified Spirit. 1 in 4 of Glycerine.

Dose.—5 to 15 grains or more.

Incompatibles—Alkalies, Subacetate of Lead.

Preparations:—

(1) **Glycerinum Acidi Borici.**—Boric Acid and Glycerine.

(2) **Unguentum Acidi Borici.**—Boric Acid, White Paraffin Ointment.

Potassii Bicarbonas.—Obtained by saturating a strong aqueous solution of Potassium Carbonate with Carbon Dioxide, and re-crystallizing the separated salt. Its solution is alkaline.

Solubility.—1 in $3\frac{1}{3}$ of Water. Insoluble in Rectified Spirit, Ether and Chloroform.

Dose.—5 to 30 grains in solution.

Incompatibles.—All Acids and Acid Salts.

Preparations.—None.

20 grains of Bicarbonate of Potassium } neutralize { 14 grains of Citric Acid. or 15 grains of Tartaric Acid.

Potassii Sulphas.—Usually prepared by neutralizing with Potassium Carbonate the Acid Potassium Sulphate left after the manufacture of Nitric Acid from Potassium Nitrate and Sulphuric Acid. Its solution is neutral.

Solubility.—1 in 10 of water. Insoluble in Rectified Spirit.

Dose.—10 to 40 grains in solution.

Incompatibles.—Salts of Lead, Calcium, Barium and Strontium.

Preparations :—

Pilula Colocynthidis Composita	For composition see preparations of Colocynth and of Ipecacuanha.
,, ,, et Hyoscyami	
,, Ipecacuanhæ cum Scilla	
Pulvis Ipecacuanhæ Compositus	

Potassii Tartras Acidus (Cream of Tartar).—Obtained by purifying the crude tartar which is deposited during the fermentation of grape juice, and from the lees of wine. Its solution is acid.

Solubility.—1 in 200 of Water. Insoluble in Rectified Spirit.

Dose.—20 to 60 grains.

Incompatibles.—Alkalies, Carbonates.

Preparations :—

Confectio Sulphuris	See preparations of Sulphur, and of Jalap.
Trochiscus Sulphuris	
Pulvis Jalapæ Compositus	

Liquor Potassæ.—A solution of Potassium Hydrate in water, prepared by boiling together Potassium Carbonate and Slaked Lime in Water. It is strongly alkaline. (About 1 of Hydrate of Potassium in 16.)

Dose.—10 to 30 minims well diluted.

Incompatibles.—Acids, Acid Salts, most Metallic Salts, Salts of Ammonium, preparations of Belladonna, Hyoscyamus, Stramonium, Cinchona, and Nux Vomica.

Preparations.—None.

Potassa Caustica.—Solid sticks or cakes of Potassium Hydrate, obtained by evaporating Liquor Potassæ, and pouring the melted residue into moulds. It is powerfully alkaline and caustic.

Solubility.—2 in 1 of Water; 1 in 3½ of Rectified Spirit; 1 in 3 of Glycerine.

Dose.—Given only as Liquor Potassæ.

Incompatibles.—Same as Liquor Potassæ.

Preparations.—None, although, as above stated, Liquor Potassæ is a solution of this salt.

Potassa Sulphurata.—A mixture of Potassium Salts, of which the chief are Sulphides, obtained by fusing together Potassium Carbonate and Sublimed Sulphur. Its solution is alkaline.

Solubility.—1 in 2 of Water; partly in Rectified Spirit.

Dose.—The British Pharmacopœia gives no dose, but it is occasionally given internally in doses of 3 to 8 grains.

Incompatibles.—Acids and Metallic Salts.

Preparations:—None.

Note.—It is used chiefly for "sulphur baths," in the proportion of 4 ounces to 30 gallons of water.

***Potassii Bromidum.**—Prepared by dissolving Bromine in Liquor Potassæ, till the solution acquires a permanent brown tint; evaporating to dryness, intimately mixing the residue (consisting of Bromide and Bromate of Potassium) with charcoal, heating in a crucible, redissolving in water, filtering, evaporating and crystallizing. Its solution is neutral.

Characters.—Colourless, somewhat *transparent*, odourless, cubical crystals.

Note—Compare with Potassium Iodide.

Solubility.—10 in 17 of Water; 1 in 95 of Rectified Spirit.

Dose.—5 to 30 grains, or more, in solution.

Incompatibles.—Acids, Acid, Metallic Salts, Spiritus Ætheris Nitrosi (unless made alkaline).

Preparations.—None.

***Potassii Iodidum.**—Obtained by process identical with that for Potassii Bromidum, substituting Iodine for Bromine. Its solution is neutral or faintly alkaline.

Characters.—Colourless, generally *opaque*, odourless, cubical crystals.

Solubility.—4 in 3 of Water; 1 in 10 of Rectified Spirit: 1 in 3 of Glycerine.

Dose.—5 to 20 grains.

Incompatibles.—Acids, Acid Salts, Salts of Silver, Mercury and Lead, Bismuth Subnitrate, Spiritus Ætheris Nitrosi (unless made alkaline by the addition of a little bicarbonate of potassium or sodium, or a little Liquor Potassæ), many alkaloids, such as Quinine.

Preparations:—

(1) **Linimentum Potassii Iodidi cum Sapone.**-

Iodide of Potassium, Curd Soap, Glycerine, Oil of Lemon, and Water.

(2) **Unguentum Potassii Iodidi.**—Potassium Iodide, Potassium Carbonate, Water, and Benzoated Lard.

(3) **All the preparations of Iodine**—(*see Iodum*).

Potassii Chloras.—Obtained by passing Chlorine into water, holding Lime or Magnesia in suspension; treating the clarified liquid with Potassium Chloride, and subsequently crystallizing the Potassium Chlorate. Its solution is neutral.

Solubility.—1 in 16 of Water; nearly insoluble in Rectified Spirit.

Dose.—5 to 15 grains in water.

Incompatibles.—Sulphur, Sulphides, Strong Acids, Iodide of Iron; other Ferrous Salts and Charcoal.

Preparation :—

Trochiscus Potassii Chloratis.—Chlorate of Potassium, Rose Lozenge Basis.

(3 grains of Potassium Chlorate in each lozenge.)

Dose.—1 to 6 lozenges.

***Potassii Permanganas.**—Caustic Potash, Potassium Chlorate and Manganese Di-oxide, are fused together; the resulting mass is boiled with water, and the clear solution is saturated with Carbon Di-oxide, evaporated and crystallized.

Characters.—Dark purple, slender, prismatic crystals; odourless, with a sweet astringent taste.

Solubility.—1 in 18 of Water.

Dose.—1 to 3 grains in pill, or in solution.

Note.—Kaolin Ointment should be used in making the pill.

Incompatibles.—All organic substances, ferrous salts and reducing agents generally.

Preparation :—

Liquor Potassii Permanganatis.—Potassium Permanganate and Water. (about 1 in 100)

Dose.—2 to 4 drachms, diluted.

Sodii Bicarbonas.—A salt obtained by saturating Carbonate of Sodium with Carbon Dioxide, or by reaction of Sodium Chloride and Ammonium Bicarbonate. Its solution is alkaline.

Solubility.—1 in 12 of Water: insoluble in Rectified Spirit.

Dose.—5 to 30 grains, in solution.

Incompatibles.—All Acids and Acid Salts.

Preparations :—

(1) **Trochiscus Sodii Bicarbonatis.**—Sodium Bicarbonate, Rose Lozenge Basis. (3 grains Sodium Bicarbonate in each lozenge.)

Dose.—1 to 6 lozenges.

(2) **Sodii Citro-Tartras Effervescens.**—Sodium Bicarbonate, Tartaric and Citric Acids and Sugar.

Dose.—1 to 2 drachms.

(3) **Pulvis Sodæ Tartaratæ Effervescens** (Seidlitz Powder).

Each *blue* paper contains { Tartarated Soda 120 grains.
Sodium Bicarbonate 40 grains.

Each *white* paper contains { Tartaric acid 38 grains.

(4) **All the other Effervescing Preparations.**

20 grains of Bicarbonate of Sodium neutralize 16.7 grains of Citric Acid, or 17.8 grains of Tartaric Acid.

Sodii Sulphas (Glauber's Salt).—May be obtained from the Acid Sodium Sulphate left in the manufacture of Hydrochloric Acid from Sodium Chloride, by neutralizing it with Sodium Carbonate, and crystallizing from solution in water. Its solution is neutral.

Solubility.—1 in 3 of Water; insoluble in Rectified Spirit.

Dose.—30 to 120 grains, in solution, for repeated administration; ¼ to ½ ounce, for a single administration.

Incompatibles.—Salts of Lead, Calcium, Barium and Strontium.

Preparation:—

Sodii Sulphas Effervescens.—Dried Sodium Sulphate, Sodium Bicarbonate, Tartaric and Citric Acids. (½ ounce = ¼ ounce crystallized Sodium Sulphate.)

Dose.—1 to 2 drachms for repeated administration; ¼ to ½ ounce, for single administration.

Sodii Nitris.—May be prepared by fusing Sodium Nitrate with metallic lead. Its solution is neutral, or faintly alkaline

Solubility.—5 in 6 of Water; 1 in 50 of Rectified Spirit.

Dose.—1 to 2 grains, in solution.

Incompatibles.—All Acids and Acid Salts.

Preparations.—None.

Sodii Bromidum.—Prepared by dissolving Bromine in a solution of Sodium Hydrate, till the solution acquires a permanent brown tint; evaporating to dryness, intimately mixing the residue (consisting of Bromide and Bromate of Sodium) with charcoal, heating in a crucible, redissolving in water, filtering, evaporating and crystallizing. Its solution is neutral.

Note.—The *process* is identical with that used for the production of Potassium Bromide and ide, and for Sodium Iodide.

Solubility.—5 in 6 of Water; 1 in 16 of Rectified Spirit.

Dose.—5 to 30 grains, or more, in solution.

Incompatibles.—Acids, Acid and Metallic Salts.

Preparations.—None.

Sodii Iodidum.—Obtained by process identical with that for Sodii Bromidum, substituting Iodine for Bromine. Its solution is neutral.

Solubility.—11 in 6 of Water; 1 in 3 of Rectified Spirit; 1 in 1 of Glycerine.

Dose.—5 to 20 grains, in solution.

Incompatibles.—Same as Potassium Iodide.

Preparations.—None.

Sodii Phosphas.—Obtained by neutralizing a solution of Acid Phosphate of Calcium with Sodium Carbonate, filtering, evaporating and crystallizing. Its solution is neutral.

Solubility.—1 in 6 of Water; insoluble in Rectified Spirit.

Dose.—30 to 120 grains for repeated administration; $\frac{1}{4}$ to $\frac{1}{2}$ ounce, in solution, for single administration.

Incompatibles.—Salts of Magnesium and Iron, and most Metallic Salts, and Alkaloids.

Preparations:—

Sodii Phosphas Effervescens.—Dried Sodium Phosphate, Sodium Bicarbonate, Citric and Tartaric Acids. ($\frac{1}{2}$ ounce = $\frac{1}{4}$ ounce of Crystallized Sodium Phosphate.)

Dose.—1 to 2 drachms for repeated administration; $\frac{1}{4}$ to $\frac{1}{2}$ ounce, for single administration.

Sodii Hypophosphis.—Prepared by adding Sodium Carbonate to a solution of Calcium Hypophosphite as long as a precipitate of Calcium Carbonate is formed, then filtering and evaporating the solution.

Solubility.—1 in 1 of Water; 1 in 2 of Glycerine; 1 in 20 of Rectified Spirit.

Dose.—3 to 10 grains, in solution.

Incompatibles.—All oxidizing agents.

Preparations.—None.

Borax (Sodium Biborate; Sodium Pyroborate).—A native salt, imported from India. It may be made artificially by boiling together, in proper proportions, Boric Acid, or Calcium Borate, and solution of Sodium Carbonate. Its solution is slightly alkaline.

Solubility.—1 in 25 of Water; 1 in 1 of Glycerine; insoluble in Rectified Spirit.

Dose.—5 to 20 grains, in solution.

Incompatibles.—Mineral Acids and most of their Salts; Salts of Cocaine and other alkaloids. Mucilage of Acacia solidifies when mixed with Borax.

Preparations:—

(1) **Glycerinum Boracis.**—Borax and Glycerine. (1 of Borax in 6½.)

Dose.—½ to 1½ drachms.

Note.—This is not a simple solution of Borax; the Glycerine decomposes the salt into free Boric Acid and a more basic Borate of Sodium. It has an acid reaction.

(2) **Mel Boracis.**—Borax, Glycerine and Honey. (about 1 of Borax in 7.)

Liquor Sodæ Chlorinatæ.—A solution of Sodium Hypochlorite and Sodium Chloride, containing about 2½ per cent. of available Chlorine, prepared by the reaction of Calx Chlorinata (Bleaching Powder) on a solution of Sodium Carbonate. It is alkaline. When acidified it gives off free Chlorine.

Dose.—10 to 20 minims, diluted.

Preparations.—None.

Sodii Arsenas.—Obtained by fusing together Arsenious Acid, Sodium Nitrate, and Dried Sodium Carbonate, dissolving the resulting mass in water, evaporating and crystallizing. It is then rendered *anhydrous* by heating to a temperature of 300° F. Its solution is alkaline.

Solubility.—1 to 4½ of Water.

Dose.—$\frac{1}{40}$ to $\frac{1}{10}$ grain, in solution.

Incompatibles.—Acids, and most Metallic Salts.

Preparation :—

Liquor Sodii Arsenatis.—Dried Arseniate of Sodium and Water. (1 in 100.)

Dose.—2 to 8 minims, diluted.

***Ammonii Chloridum.**—May be formed by neutralizing Hydrochloric Acid with Ammonia or Ammonium Carbonate, and evaporating to dryness. The dry residue is usually sublimed. Its solution is neutral.

Characters.—In colourless minute crystals, or as usually prepared, in translucent *fibrous crystalline masses*, tough, and difficult to powder. It has *no odour.*

Note.—Compare with Alumen, Hydrargyri Perchloridum, and Ammonii Carbonas.

Solubility—1 in 3 of Water; 1 in 55 of Rectified Spirit.

Dose.—5 to 20 grains, in solution.

Incompatibles.—Salts of Lead and Silver, Alkalies, Alkaline Earths and their Carbonates.

Preparations.—None.

***Ammonii Carbonas.**—Produced by submitting to sublimation a mixture of Ammonium Chloride or Sulphate, and Calcium Carbonate. It consists of Acid Carbonate and Carbamate of Ammonium. Its solution is alkaline.

Characters.—In translucent crystalline masses, with a *strong ammoniacal odour.*

Solubility.—1 in 4 of Water; 1 in 200 of Rectified Spirit.

Dose.—3 to 10 grains, in dilute solution.

Incompatibles.—Acids, Acid Salts, Salts of Calcium, Barium, Strontium, Magnesium, Zinc and Iron; Salts of Alkaloids.

20 grains of Carbonate of Ammonium neutralize $\left\{\begin{array}{l} 26\frac{3}{4} \text{ grains of Citric Acid or} \\ 28\frac{3}{4} \text{ ,, ,, Tartaric Acid.} \end{array}\right.$

Preparation:—

Spiritus Ammoniæ Aromaticus (Spirit of Sal Volatile)—Ammonium Carbonate, Strong Solution of Ammonia, Oil of Lemon, Oil of Nutmeg, Rectified Spirit and Water.

Dose.—20 to 40 minims diluted, for repeated administration; 60 to 90 minims for single administration.

Liquor Ammoniæ Fortis.—Ammonia gas (NH_3), (evolved from Ammonium Chloride and Slaked Lime) dissolved in Water, and constituting $32\frac{1}{2}$ per cent. by weight of the liquid. It has a strongly alkaline reaction and an extremely pungent odour.

Dose.—Not given internally.

Incompatibles.—Acid, and Acid Salts; most preparations containing alkaloids.

Preparations:—

(1) It is used in preparing, Spiritus Ammoniæ Fœtidus, Linimentum Camphoræ Ammoniatum, Linimentum Hydrargyri, Spiritus Ammoniæ Aromaticus, and Tinctura Guaiaci Ammoniata, all of which are described elsewhere.

(2) Liquor Ammoniæ.—Strong Solution of Ammonia and Water. (1 in 3.)

Note.—Liquor Ammoniæ is used in the preparation of Linimentum Ammoniæ, Tinctura Ergotæ Ammoniata, Tinctura Opii Ammoniata, Tinctura Quininæ Ammoniata, and Tinctura Valerianæ Ammoniata.

Liquor Ammonii Acetatis.—Prepared by neutralizing a solution of Ammonium Carbonate with Acetic Acid. It should be neutral.

Dose.—2 to 6 drachms.

Incompatibles.—Acids, Potash, Soda and their Carbonates, Lime Water, Salts of Lead and Silver.

Preparations :—None.

Ammonii Bromidum.—May be formed by neutralizing Hydrobromic Acid with Ammonia, evaporating and crystallizing. Its solution is neutral.

Solubility.—1 in 1½ of Water; 1 in 15 of Rectified Spirit.

Dose.—5 to 30 grains, in solution.

Incompatibles. — Acids, and Acid Salts; Spiritus Ætheris Nitrosi unless rendered slightly alkaline.

Preparations.—None.

Creta Præparata (Prepared Chalk).—Chalk, freed from most of its impurities by elutriation, and afterwards dried in small cones.

Solubility.—Insoluble in Water or Spirit.

Dose.—10 to 60 grains, suspended in Water.

Incompatibles.—All Acids, Acid Salts, and Sulphates.

Preparations :—

(1) Mistura Cretæ.—Prepared Chalk, Tragacanth. Sugar and Cinnamon Water.
Dose.—½ to 1 ounce. (1 of Chalk in 32.)

(2) Pulvis Cretæ Aromaticus.—Cinnamon, Nutmeg. and Cloves, Cardamoms, Sugar and Chalk.
Dose.—10 to 60 grains, in water. (1 of Chalk in 4¼.)

(3) Pulvis Cretæ Aromaticus cum Opio — (*see Opium*).

(4) Hydrargyrum cum Creta—(*see Hydrargyrum*).

Calcii Carbonas Præcipitata (Precipitated Chalk).—Obtained by precipitating a solution of Calcium Chloride with Sodium Carbonate, washing and drying the precipitate.

Solubility.—Insoluble in Water or Spirit.

Dose.—10 to 60 grains, suspended in Water.

Incompatibles.—All Acids, Acid Salts and Sulphates.

Preparation :—

Trochiscus Bismuthi Compositus—(*see Bismuthi Carbonas*).

Calx (Lime).—Calcium Oxide with some impurities, obtained by calcining Chalk, Limestone or Marble so as to expel Carbon Dioxide.

Note.—Used only for the preparation of Calcii Hydras.

Calcii Hydras.—Calcium Hydrate, with some impurities, prepared by adding a pint of Water to 2 lbs. of Lime.

Solubility.—1 in 900 of Water. Much more soluble in a solution of Sugar.

Dose.—Given only in its preparations.

Incompatibles.— All Acids, Alkaline and Metallic Salts, Tartar Emetic.

Preparations :—

(1) Liquor Calcis (Lime Water).—Calcium Hydrate dissolved in Water. (about 1 in 900.)

Dose.—1 to 4 ounces.

(2) Liquor Calcis Saccharatus.—Calcium Hydrate, Sugar and Water.

(about 1 of Calcium Hydrate in 62.)

Dose.—20 to 60 minims.

(3) Linimentum Calcis.—Lime Water and Olive Oil, equal parts.

Calcii Phosphas.—Prepared by dissolving Bone Ash (impure Calcium Phosphate) in Hydrochloric Acid, and precipitating with Ammonia; or by mixing solutions of Calcium Chloride and Sodium Phosphate.

Solubility.—Insoluble in Water and in Spirit.

Dose.—5 to 15 grains.

Preparation :—

Pulvis Antimonialis.—Antimony Oxide and Calcium Phosphate. (1 of Antimony Oxide in 3.)

Dose.—3 to 6 grains.

Calcii Hypophosphis.—Phosphorus and Calcium Hydrate are boiled with Water till Phosphoretted Hydrogen ceases to come off; the solution is freed from uncombined Lime by passing Carbon Dioxide through it. It is then filtered, evaporated and crystallized.

Solubility.—1 in 8 of Water. Insoluble in Spirit.

Dose.—3 to 10 grains, in solution.

Incompatibles.—All oxidizing agents.

Preparations.—None.

Calx Sulphurata.—Consists of about 50 per cent. (not much less) of Calcium Sulphide, and is prepared by heating Calcium Sulphate with Carbon.

Solubility.—Very slightly in Water; the solution rapidly decomposes.

Dose.—¼ to 1 grain, in a coated pill.

Incompatibles.—Acids, Metallic Salts.

Preparations.—None.

* * *

***Calx Chlorinata** (Bleaching Powder: often wrongly called "Chloride of Lime").—Obtained by exposing Calcium Hydrate to the action of Chlorine as long as the latter is absorbed. It is usually regarded as a mixture of Calcium Chloride and Calcium Hypochlorite. Its solution is alkaline. Acids liberate Hypochlorous Acid, or free Chlorine. Should have 33 per cent. of available Chlorine.

Characters.—A dull white powder with a feeble *odour of chlorine.*

Solubility.—Only partially soluble in Water and in Spirit.

Dose.—Given only as Liquor Calcis Chlorinatæ.

Incompatibles.—Acids, Acid Salts.

Preparation :—

Liquor Calcis Chlorinatæ.—A solution of Calx Chlorinata in Water. (1 in 10.)

Dose.—20 to 40 minims, diluted.

* * *

***Magnesii Sulphas** (Epsom Salt).—Obtained by dissolving native Magnesium Carbonate in Sulphuric Acid, and purifying by crystallization. Its solution is slightly acid.

Characters.—Minute colourless rhombic prisms, with a *bitter taste.* Its solution in water gives no precipitate with Ammonium Chloride, Ammonium

Hydrate, and Ammonium Sulphide. (*Compare with Zinci Sulphas.*)

Solubility.—10 in 13 of Water; insoluble in Spirit.

Dose.—30 to 120 grains, in solution, for repeated administration; $\frac{1}{4}$ to $\frac{1}{2}$ ounce for single administration.

Incompatibles.—Alkaline Carbonates, Lime Water, Salts of Lead, Silver, Calcium, Barium, Strontium; Soda Tartarata.

Preparations:—

(1) **Magnesii Sulphas Effervescens.**—Dried Magnesium Sulphate, Sodium Bicarbonate, Citric and Tartaric Acids, and Sugar.

Dose.—1 to 4 drachms for repeated administration; $\frac{1}{2}$ to 1 ounce for single administration.

(1 ounce = $\frac{1}{2}$ ounce of Crystallized Magnesium Sulphate.)

(2) **Mistura Sennæ Composita**—(*see Senna*).

(1 of Magnes. Sulph. in 4.)

Magnesii Carbonas Levis (Light Magnesium Carbonate).—Obtained by mixing *cold* and *dilute* solutions of Magnesium Sulphate and Sodium Carbonate, boiling, and washing the precipitate.

Solubility.—Practically insoluble in Water and in Spirit.

Dose.—5 to 30 grains, in suspension in water, for repeated administration; 30 to 60 grains for single administration.

Incompatibles.—Acids, and Acid Salts.

Preparations.—None.

Magnesii Carbonas Ponderosa (Heavy Magnesium Carbonate).—Obtained by mixing *boiling* and *strong* solutions of Magnesium Sulphate and Sodium Carbonate, evaporating to dryness, and washing the precipitate.

Solubility : *Dose :* *Incompatibles :* Same as Magnesii Carbonas Levis.

Preparations :—

(1) **Liquor Magnesii Carbonatis** (Fluid Magnesia).—Prepared by dissolving freshly precipitated Magnesium Carbonate in water impregnated with Carbon Dioxide, under pressure.

(10 grains of Magnes. Carb. in each ounce.)

Dose.—1 to 2 ounces.

(2) **Trochiscus Bismuthi Compositus**—(*see Bismuthi Carbonas*).

Magnesia Levis and **Magnesia Ponderosa** (Light and Heavy Magnesia; Calcined Magnesia).—Magnesium Oxide obtained by heating the Light and Heavy Carbonates respectively, so as to drive off Carbon Dioxide.

Solubility.—Practically insoluble in Water and Rectified Spirit.

Dose.—Same as Magnesii Carbonas Levis.

Incompatibles.—All Acids.

Preparations.—Of the Heavy Carbonate, none. Of the Light Carbonate, **Pulvis Rhei Compositus**, *see Rhei Radix.*

Zinci Oxidum (Zinc Oxide).—Prepared by heating Zinc Carbonate to expel Carbon Dioxide, or by burning metallic Zinc in the air.

Solubility.—Insoluble in Water and in Rectified Spirit.

Dose.—3 to 10 grains, in pills, with glucose.

Incompatibles.—All Acids.

Preparation :—

Unguentum Zinci.—Zinc Oxide and Benzoated Lard.

Zinci Chloridi Liquor (Solution of Zinc Chloride).—Metallic Zinc (granulated) is dissolved in Hydrochloric Acid. The solution is then tested with Ammonium Hydrate, and Ammonium Sulphide for Lead and Iron. If either is found, the following process is used for the removal of the impurity :—

Add Liquor Chlori till the liquid acquires, after shaking, a permanent odour of Chlorine (this converts any Iron present into the Ferric state). Zinc Carbonate is then added, and the Lead and Iron are precipitated. Filter and evaporate to the prescribed bulk. If no Lead or Iron be present, filter and evaporate at once. Contains 3 grains Zinc Chloride in 4 minims.

Note.—Resembles Burnett's Disinfecting Fluid.

Dose.—Not given internally.

Incompatibles.—Lead and Silver Salts; Alkalies and their Carbonates and Sulphides.

Preparations.—See Zinci Chloridum, below.

Zinci Chloridum (Zinc Chloride).—Sticks or tablets obtained by evaporating a solution of Zinc Chloride, obtained and purified (if necessary) as described above, and pouring the melted salt into moulds. It is very deliquescent and caustic. Its solution is acid.

Solubility.—10 in 4 of Water; 1 in 1 of Rectified Spirit; freely in Ether; 1 in 4 of Glycerine.

Dose.—Not usually given internally.

Incompatibles.—Lead and Silver Salts; Alkalies and their Carbonates and Sulphides.

Preparations.—None, though it is contained in Liquor Zinci Chloridi. *See above.*

***Zinci Sulphas** (Zinc Sulphate, White Vitriol).—Metallic Zinc (granulated) is dissolved in diluted Sulphuric Acid, and the solution (purified, if necessary, by the process described under Zinci Chloridi Liquor) filtered, evaporated, and crystallized. Its solution is acid.

Characters.—Colourless, transparent, prismatic crystals, with a *strong metallic astringent taste.* Its aqueous solution gives a precipitate with Ammonium Chloride, Ammonium Hydrate and Ammonium Sulphide added in succession. (*Compare with Magnesii Sulphas.*)

Solubility.—10 in 7 of Water; insoluble in Rectified Spirit.

Dose.—1 to 3 grains, as a tonic; 10 to 30 grains, in solution, as an emetic.

Incompatibles.—Salts of Lead; Alkalies and their Carbonates and Sulphides.

Preparations.—None.

Note.—It is used in the manufacture of Unguentum Zinci Oleatis.

Argenti Nitras (Silver Nitrate, Lunar Caustic).—Obtained by dissolving refined Silver in Nitric Acid, evaporating and crystallizing, and if required in "caustic sticks," melting the crystals in a platinum crucible and pouring into moulds. Its solution is acid.

Solubility.—About 2 in 1 of Water; 1 in 18 of Rectified Spirit.

Dose.—¼ to ½ grain, made into pill with Kaolin Ointment.

Incompatibles.—Alkalies and their Carbonates; Chlorides, Iodides, Bromides, Sulphides, Phosphates; Arsenic; Acids, except Nitric and Acetic; Vegetable Preparations generally; and Alkaloids.

Preparations:—

(1) **Argenti Nitras Induratus, or Toughened Caustic.**—Melt together 5 parts Potassium Nitrate, with 95 parts Silver Nitrate, and pour into moulds.

(2) **Argenti Nitras Mitigatus** (Mitigated Caustic).—Silver Nitrate 1 part with Potassium Nitrate 2 parts, melted together, and poured into moulds.

***Cupri Sulphas** (Copper Sulphate, Blue Vitriol, Blue Stone).—By dissolving metallic copper in *strong hot* Sulphuric Acid, diluting with water, evaporating and crystallizing; or Cupric Oxide in *dilute hot* Sulphuric Acid, evaporating and crystallizing. Its solution is acid.

Characters.—In large triclinic prismatic crystals of a clear blue colour.

Solubility.—1 in 3½ of Water; insoluble in Rectified Spirit; 1 in 2½ of Glycerine.

Dose.—As an astringent, ¼ to 2 grains in solution or in pill; as an emetic, 5 to 10 grains, in solution.

Incompatibles.—Alkalies and their Carbonates; Lime Water, Mineral Salts (except other Sulphates), Iodides, and most Vegetable Preparations.

Preparations.—None.

***Plumbi Oxidum** (Lead Oxide; Litharge).—Obtained by heating metallic Lead in the air.

Characters.—Heavy scales of a pale yellowish brick-red colour.

Solubility.—Insoluble in Water and Rectified Spirit.

Dose.—Not given internally.

Preparation:—

Emplastrum Plumbi (Lead Plaster). By boiling together Lead Oxide, Olive Oil, and Water.

Note.—Lead Plaster consists chiefly of Lead Oleate, and is an ingredient of all the Plasters of the Brit. Pharm. except three, viz.: Ammoniacum and Mercury, Menthol, and Pitch Plasters.

***Plumbi Acetas** (Lead Acetate: Sugar of Lead).—By dissolving Lead Oxide, or Lead Carbonate, in Acetic Acid, evaporating and crystallizing. Its solution is slightly acid.

Characters.—White masses of interlaced acicular crystals, or in small white monoclinic prisms, slightly efflorescent, having an acetous odour, and a sweet astringent taste.

Solubility.—1 in 2 of Water; 1 in 20 of Rectified Spirit; 1 in 2 of Glycerine.

Dose.—1 to 5 grains, usually in pill.

Incompatibles.—Most Mineral Acids and Salts (except Nitric Acid and Nitrates); Organic Acids; Alkalies and their Salts (except Nitrates); Hard Water.

Preparations:—

(1) **Pilula Plumbi cum Opio.**—Acetate of Lead, Opium, and Syrup of Glucose.

(1 of Opium and 6 of Lead Acetate in 8.)

Dose.—2 to 4 grains.

(2) **Suppositoria Plumbi Composita.**—Lead Acetate, Opium, and Cocoa Butter.

(1 grain of Opium, and 3 grains of Lead Acetate in 15 grains, that is, in each Suppository.)

(3) **Unguentum Plumbi Acetatis.**—Lead Acetate and White Paraffin Ointment.

Plumbi Iodidum.—Obtained as a yellow precipitate by mixing together solutions of Lead Nitrate and Potassium Iodide.

Solubility.—1 in 2,000 of Water: soluble in solutions of Acetates, and of Ammonium Chloride.

Dose.—Not given internally.

Incompatibles.—Acids and Acid Salts.

Preparations:—

(1) **Emplastrum Plumbi Iodidi.**—Lead Iodide, Lead Plaster, and Resin, melted together at a low temperature.

(2) **Unguentum Plumbi Iodidi.**—Lead Iodide, and Yellow Paraffin Ointment.

Plumbi Subacetatis Liquor Fortis (Goulard's Extract). By boiling together Lead Acetate, Lead Oxide and Water. It is a solution of a basic lead acetate, and is alkaline.

Dose.—Not given internally.

Incompatibles.—Same as those of Plumbi Acetas, with the addition of Mucilage of Acacia, with which it forms an opaque jelly.

Preparation:—

Liquor Plumbi Subacetatis Dilutus (Lead Lotion: Goulard's Water).—2 drachms each of Liquor Plumbi Subacetatis Fortis, and Rectified Spirit to 19½ ounces of Water.

Plumbi Subacetatis Glycerinum.—A solution of basic lead acetate in glycerine, obtained by a process similar to that for Liquor Plumbi Subacetatis Fortis, using glycerine instead of water. It is alkaline.

Dose.— Not given internally.

Incompatibles.—Same as Liquor Plumbi Subacetatis Fortis.

Preparation:—

Unguentum Glycerini Plumbi Subacetatis.—Glycerine of Subacetate of Lead with White Paraffin Ointment.

***Hydrargyrum.**—Metallic Mercury, obtained, usually, by distilling the Native Sulphide.

Characters.—A brilliantly lustrous white liquid metal, easily divisible into spherical globules.

Solubility.—Insoluble in Water, Spirit, Ether, Chloroform, Oils, Glycerine.

Dose.—Given only in its preparations.

Preparations:—

(1) Hydrargyrum cum Creta (Grey Powder).—By rubbing together Prepared Chalk and Mercury in a mortar till metallic globules disappear.

Dose.—1 to 5 grains. (1 of Mercury in 3.)

(2) Pilula Hydrargyri (Blue Pill).—By rubbing together in a mortar Confection of Roses, and Mercury, till metallic globules disappear, then adding powdered Liquorice Root.

Dose.—4 to 8 grains. (1 of Mercury in 3.)

(3) Unguentum Hydrargyri (Blue Unction; Trooper's Ointment).—Prepared Suet and Lard are rubbed in a mortar with Mercury till metallic globules are no longer visible. (1 of Mercury in 2.)

(4) Unguentum Hydrargyri Compositum (Scott's

Ointment).—Mercurial Ointment, Yellow Wax. and Olive Oil melted together, and Camphor added. (1 of Mercury in 5)

(5) **Linimentum Hydrargyri.**—Mercurial Ointment, Strong Solution of Ammonia, and Liniment of Camphor. (1 of Mercury in 6.)

(6) **Emplastrum Hydrargyri.**—Mercury, Olive Oil, Sulphur, and Lead Plaster. (1 of Mercury in 3.)

(7) **Emplastrum Ammoniaci cum Hydrargyro.**—Ammoniacum, Mercury, Olive Oil, and Sulphur. (1 of Mercury in 5.)

Note.—All these preparations contain Metallic Mercury in a state of fine division. Hydrargyrum cum Creta, and Pilula Hydrargyri are the only ones for internal use, and their strength is the same.

***Hydrargyri Subchloridum** (Mercury Subchloride: Calomel).—Mercurous Chloride obtained by sublimation from a mixture of Mercury Persulphate, Metallic Mercury, and Sodium Chloride.

Characters.—A dull-white, heavy, odourless and nearly tasteless powder. Sometimes becomes slightly yellowish in colour, by exposure to light. Entirely volatilized by heat.

Solubility.—Insoluble in Water, Spirit, and Ether.

Dose.—$\frac{1}{2}$ to 5 grains, as a powder, or in pill.

Incompatibles.—Alkalies and their Iodides and Bromides; Liquor Chlori; Nitro-Hydrochloric, Nitric and Hydrocyanic Acids.

Preparations:—

(1) **Lotio Hydrargyri Nigra** (Black Wash).—Mercury Subchloride, Glycerine, Mucilage of Tragacanth, and Lime Water (3 grains to 1 ounce).

Note.—The Lime Water decomposes the Mercury Subchloride, forming Black Mercurous Oxide.

(2) **Pilula Hydrargyri Subchloridi Composita** (Plummer's Pill).—Mercury Subchloride, Sulphurated Antimony, Guaiacum Resin, Castor Oil and Rectified Spirit.
(1 of Mercury Subchloride, and 1 of Sulphurated Antimony in $4\frac{1}{2}$.)

Dose.—4 to 8 grains.

(3) **Unguentum Hydrargyri Subchloridi.**—Mercury Subchloride and Benzoated Lard. (1 in 10.)

***Hydrargyri Perchloridum** (Mercury Perchloride; Mercury Bichloride; Corrosive Sublimate).—Mercuric Chloride obtained by sublimation from a mixture of Mercury Persulphate, Manganese Dioxide, and Sodium Chloride. Manganese Dioxide is used to prevent the formation of any Mercurous Chloride. Its solution is acid.

Characters.—In very heavy colourless masses of prismatic crystals odourless, but with a highly acrid metallic taste. (*Compare with Acidum Arseniosum.*)

Solubility.—1 in 19 of Water; 1 in 5 of Rectified Spirit; 1 in 6 of Ether; 2 in 3 of Glycerine.

Dose.—$\frac{1}{32}$ to $\frac{1}{16}$ grain, in very dilute solution.

Incompatibles.—Alkalies, and their Iodides, Bromides and Carbonates. Salts of Silver and Lead; Tartar Emetic; Cinchona Preparations; Albumen.

Preparations:—

(1) **Liquor Hydrargyri Perchloridi.**—Mercury Perchloride, and Water. (1 in 875.)

Dose.—$\frac{1}{2}$ to 1 drachm. A drachm = $\frac{1}{16}$ gr. of Mercury Perchloride.

(2) Lotio Hydrargyri Flava (Yellow Wash).—Mercury Perchloride, and Lime Water.
(1 of Mercury Perchloride in 219.)

Note.—The Lime Water decomposes the Mercury Perchloride forming Mercuric (Yellow) Oxide.

Hydrargyri Oleas.—Mercuric Oleate precipitated by boiling together solutions of Mercury Perchloride and Hard Soap in water, with Oleic Acid.

Solubility.—Insoluble in Water and in Rectified Spirit; soluble in Oleic Acid.

Dose.—Not given internally.

Preparation:—

Unguentum Hydrargyri Oleatis.—Mercury Oleate and Benzoated Lard. (1 of Oleate in 4.)

***Hydrargyri Oxidum Flavum** (Yellow Oxide of Mercury).—Mercuric Oxide, obtained by precipitating a solution of Mercury Perchloride with Solution of Sodium Hydrate.

Characters.—A yellow, impalpable, heavy powder, turning darker in colour on exposure to light.

Solubility.—Insoluble in Water or in Spirit.

Dose.—Seldom given internally; $\frac{1}{4}$ to 1 grain.

Incompatibles.—Acids; Sulphides.

Preparation:—

Unguentum Hydrargyri Oxidi Flavi.—Yellow Oxide of Mercury, and Yellow Soft Paraffin.
(1 in 50.)

Note.—It is contained in Lotio Hydrargyri Flava (*vide supra*).

***Hydrargyri Oxidum Rubrum** (Red Oxide of Mercury).—Mercuric Oxide, obtained by heating a mixture of Mercuric Nitrate and Metallic Mercury.

Characters.—A heavy, orange-red, crystalline powder.

Solubility.—Insoluble in Water or Spirit.

Dose.—Seldom given internally; $\frac{1}{4}$ to 1 grain.

Incompatibles.—Acids; Sulphides.

Preparation:—

Unguentum Hydrargyri Oxidi Rubri.—Red Oxide of Mercury, Yellow Paraffin Ointment.
(1 of Oxide in 10)

***Hydrargyri Iodidum Rubrum** (Red Iodide of Mercury).—Mercuric Iodide prepared by mixing solutions of Mercury Perchloride and Potassium Iodide, and washing the precipitate.

Characters.—A very finely crystalline powder, of a bright vermilion colour. Becomes yellow when gently heated.

Solubility.—Nearly insoluble in Water; sparingly soluble in Glycerine; 1 in 300 of Rectified Spirit; 1 in 70 of Ether; 1 in 50 of Castor Oil; freely in aqueous solutions of soluble Iodides.

Incompatibles.—Acids; Sulphides; Alkaloids.

Dose.—$\frac{1}{32}$ to $\frac{1}{16}$ grain, dissolved in a solution of Potassium Iodide, or in pills with Sugar of Milk and Glucose.

Preparations:—

(1) Liquor Arsenii et Hydrargyri Iodidi.—Iodide of Arsenium, and Red Iodide of Mercury dissolved in Water. (1 of each Iodide in 100.)
Dose.—5 to 20 minims.

(2) Unguentum Hydrargyri Iodidi Rubri.—Red Iodide of Mercury and Benzoated Lard.
(1 in 25.)

Hydrargyrum Ammoniatum (Ammoniated Mercury: Ammonio-chloride of Mercury; "White Precipitate").—Chloride of Mercuric Ammonium obtained by precipitation from a solution of Mercury Perchloride, by pouring it into a solution of Ammonia.

Note.—The order of mixing the solutions must not be reversed, or a precipitate of different composition is formed.

Solubility.—Insoluble in Water, Spirit, or Ether.

Dose.—Not given internally.

Preparation:—

Unguentum Hydrargyri Ammoniati.—Ammoniated Mercury and White Paraffin Ointment. (1 in 10.)

Hydrargyri Nitratis Liquor Acidus (Acid Solution of Nitrate of Mercury).—A solution of Mercuric Nitrate in Nitric Acid. prepared by dissolving Metallic Mercury in excess of slightly diluted Nitric Acid.

Dose.—Not given internally.

Incompatibles.—Sulphides; Alkalies; Alkaline Earths.

Preparations.—None.

Note.—There are two other official preparations of Mercuric Nitrate, viz.:—Unguentum Hydrargyri Nitratis and Ung. Hydrarg. Nitrati Dilutum, but they are not prepared from the Liquor.

Ferrum (Iron).—Annealed iron wire of about 0·005 inch diameter, or wrought iron nails, free from oxide.

Preparation:—

Vinum Ferri.—Iron Wire, and Sherry.

Dose.—1 to 4 drachms†.

Note.—Iron Wire is used also in the preparation of Ferri Sulphas, Liquor Ferri Perchloridi Fortis, Liquor Ferri Pernitratis, Syrupus Ferri Iodidi, Syrupus Ferri Phosphatis and Syrupus Ferri Phosphatis cum Quinina et Strychnina.

† Preparations of Iron should always be administered after meals.

*__Ferri Sulphas__ (Iron Sulphate).—Ferrous Sulphate, obtained by dissolving Iron Wire in diluted Sulphuric Acid, filtering and crystallizing. Its solution is acid.

Characters.—Pale green oblique rhombic prisms; odourless, but with a styptic taste. Often slightly brown from oxidation.

Solubility.—Soluble 1 in 1½ of Water; the solution rapidly oxidizes and deposits Ferri Oxide. Insoluble in Rectified Spirit.

Dose.—1 to 5 grains in pill, or in solution recently prepared or slightly acidulated.

Incompatibles.—Alkalies and their Carbonates and Bicarbonates; Alkaline Earths and their Carbonates; Vegetable preparations containing Tannic Acid.

Preparations:—

(1) **Ferri Sulphas Exsiccatus** (Dried Iron Sulphate).—Crystallized Sulphate of Iron dried at a temperature of 212° F. till its water of crystallization has been expelled.

(2½ parts = 4 parts of Crystalline Sulphate.)

Dose.—½ to 3 grains in pill; with Treacle and Glucose.

(2) **Pilula Aloes et Ferri.**—Dried Iron Sulphate, Barbadoes Aloes, Compound Powder of Cinnamon, and Syrup of Glucose.

Dose.—4 to 8 grains.

(3) **Pilula Ferri** (Blaud's Pill).—Dried Iron Sulphate, Dried Sodium Carbonate, Tragacanth, Glycerine, Gum Acacia, Syrup and Water.

Dose.—5 to 15 grains.

Note.—5 grains = about 1 grain of Ferrous Carbonate.

(4) **Mistura Ferri Composita** (Griffith's Mixture).—

Iron Sulphate, Potassium Carbonate, Myrrh, Sugar, Spirit of Nutmeg, and Rose Water. The ingredients, except the Iron Sulphate, are formed into a mixture by rubbing in a mortar, and the Iron Sulphate is then added. It must be freshly prepared, as the Iron Salt rapidly oxidizes.

Dose.—½ to 1 ounce.

Note. ·1 ounce = about 1 grain of Ferrous Carbonate.

N.B.—Preparations 3 and 4 are designed for the administration of Ferrous Carbonate, resulting from the reaction of the Iron Sulphate and the Carbonate.

***Ferri Phosphas** (Iron Phosphate).—A mixture of Ferrous and Ferric Phosphates, with some Iron Oxide, obtained by precipitation from a solution of Ferrous Sulphate by the addition of Sodium Phosphate and Sodium Bicarbonate.

Note.—Sodium Bicarbonate is employed to insure the precipitation of the whole of the Iron Phosphate, by neutralizing the Sulphuric Acid formed in the reaction of Iron Sulphate with Sodium Phosphate.

Characters.—A fine powder of slate-blue colour, becoming of a green hue by keeping. (*Compare with Ferri Arsenias.*)

Solubility.—Insoluble in Water and Spirit. Soluble in Acids.

Dose.—5 to 10 grains as a powder, or mixed with Honey as a confection, or dissolved in Phosphoric Acid, and diluted; or as pills with Glucose.

Incompatibles.—Same as Ferri Sulphas.

Preparations:—

(1) **Syrupus Ferri Phosphatis.**—Iron Wire, Strong Phosphoric Acid, Syrup, and Water.

(1 grain of Phosphate in each drachm.)

Dose.—½ to 1 drachm, diluted.

(2) **Syrupus Ferri Phosphatis cum Quinina et Strychnina.**—Syrupus Ferri Phosphatis with $\frac{4}{5}$ grain of Quinine Sulphate and $\frac{1}{32}$ grain of Strychnine added to each drachm.

Dose.—½ to 1 drachm, diluted.

Note.—It is commonly called Easton's Syrup.

***Ferri Arsenas** (Iron Arsenate).—A mixture of Ferrous and Ferric Arsenate, with some Iron Oxide, obtained by precipitation from a solution of Ferrous Sulphate by the addition of Sodium Arsenate and Sodium Bicarbonate.

Note.—Sodium Bicarbonate is employed to insure the precipitation of the whole of the Iron Arsenate, by neutralizing the Sulphuric Acid formed in the reaction of Iron Sulphate with Sodium Arsenate.

Characters.—A fine powder of a dull greenish colour.

Solubility.—Insoluble in Water and Spirit. Soluble in Acids.

Dose.—$\frac{1}{16}$ to ¼ grain in pill, with Sugar of Milk and Glucose.

Preparations.—None.

***Ferri Carbonas Saccharatus** (Saccharated Iron Carbonate).—Ferrous Oxy-carbonate, with some Ferric Oxide, mixed with Sugar. It is prepared by precipitating Ferrous Oxy-carbonate from a hot solution of Ferrous Sulphate by Ammonium Carbonate, washing, collecting, and squeezing the precipitate, mixing it with powdered Sugar, and drying. Contains 33 per cent. of Anhydrous Ferrous Carbonate.

Dose.—10 to 30 grains.

Note.—The Sugar protects the particles of Iron Carbonate (to some extent) from oxidation.

Characters.—Very small coherent lumps or powder, of a greyish-brown colour, with a sweet and feeble metallic taste. It effervesces with warm diluted Hydrochloric Acid.

Solubility.—The Iron Salts are insoluble in Water, but the Sugar dissolves.

Dose.—10 to 30 grains in pills with Glucose, or as a Confection with Honey.

Incompatibles.—Acids and Acid Salts; all vegetable preparations containing Tannic Acid.

Preparations.—None.

Ferri Iodidi Syrupus (Syrup of Iodide of Iron).—Obtained by preparing a solution of Ferrous Iodide by direct combination of Iron Wire and Iodine in water, and adding it to a strong solution of Sugar. (1 grain of Iodide in each 11 minims.)

Dose.—½ to 1 drachm, diluted with water at the time of administration.

Incompatibles.—Acids, Acid Salts; Alkalies and their Carbonates; Lime Water; Potassium Chlorate; Vegetable Preparations containing Tannic Acid.

Preparations.—None.

Ferri Persulphatis Liquor (Solution of Persulphate of Iron).—A strong solution of Ferric Sulphate obtained by pouring a solution of Ferrous Sulphate acidulated with Sulphuric Acid into warm Nitric Acid. The Nitric Acid is decomposed, Nitric Oxide gas is evolved, and the Iron is raised from the *Ferrous* to the *Ferric* state.

Note.—This solution is only used for making other preparations of Iron.

Ferri Pernitratis Liquor (Solution of Pernitrate of Iron).—A solution of Ferric Nitrate obtained by dissolving Iron Wire in diluted Nitric Acid. Is strongly acid.

Dose.—5 to 15 minims, diluted.

Incompatibles.—Same as Ferri Perchloridi Liquor Fortis (*vide infra*).

Preparations.—None.

Ferri Perchloridi Liquor Fortis (Strong Solution of Perchloride of Iron).—A solution of Ferric Chloride obtained by dissolving Iron Wire in excess of slightly diluted Hydrochloric Acid, and pouring the resulting solution of Ferrous Chloride into warm Nitric Acid. The Nitric Acid is decomposed, Nitric Oxide gas is evolved, and the Iron is raised from the *Ferrous* to the *Ferric* state.

It mixes in all proportions with Water and with Spirit. Contains 22½ per cent. of Iron. Is strongly acid.

Dose.—Given only in its diluted forms.

Incompatibles.—Alkalies and their Carbonates and Bicarbonates: Alkaline Earths and their Carbonates; Vegetable Preparations containing Tannic Acid; Mucilage of Acacia. It is reduced to the *Ferrous* state by Glycerine, and its strong astringent taste is lessened; its powerful styptic properties are also modified.

Preparations:—

(1) Liquor Ferri Perchloridi.—Strong Solution of Perchloride of Iron, and Water.

(1 of Strong Solution in 4.)

Dose.—5 to 15 minims, well diluted.

(2) Tinctura Ferri Perchloridi.—Strong Solution

of Perchloride of Iron, Rectified Spirit, and Water. (1 of Strong Solution in 4.)

Dose.—5 to 15 minims, well diluted.

Ferri Acetatis Liquor (Solution of Acetate of Iron).—A solution of Ferric Acetate made by precipitating Ferric Hydrate from Solution of Persulphate of Iron by Ammonia, washing the precipitate, dissolving in Glacial Acetic Acid and diluting with Water. Mixes with Water and Spirit in all proportions. The solution is acid.

Dose.—5 to 15 minims, well diluted.

Incompatibles.—Same as Ferri Perchloridi Liquor Fortis.

Preparations.—None.

***Ferrum Redactum** (Reduced Iron).—Metallic Iron in a state of fine division, with a variable amount of Ferric Oxide. Made by passing dry Hydrogen over heated Ferric Oxide. It oxidizes when exposed to air.

Characters.—A fine greyish-black powder, strongly attracted by a magnet, and showing metallic streaks when a small quantity is rubbed, with firm pressure on the pestle, in a mortar.

Solubility.—Insoluble in Water, Spirit, and Glycerine.

Dose.—1 to 5 grains, in suspension, or with Honey and Glycerine as a confection, or in pill with powdered Liquorice and Glycerine of Tragacanth.

Incompatibles.—All Acids, and Acid Salts.

Preparation:—

Trochiscus Ferri Redacti (Lozenge of Reduced Iron).—Reduced Iron, and Simple Lozenge Basis. (1 grain in each Lozenge.)

Dose.—1 to 6 Lozenges.

·**Ferrum Tartaratum** (Tartarated Iron; Ferri Potassio-Tartras).—Prepared by dissolving freshly precipitated, and washed, Ferric Hydrate in a solution of Potassium Acid Tartrate; filtering and evaporating the solution; drying on porcelain or glass plates, and preserving the dry scales in a stoppered bottle. Its solution is faintly acid.

Characters.—In thin transparent *garnet coloured* scales; *not deliquescent.* (*Compare with Ferri et Ammonii Citras.*)

Solubility.—1 in 4 of Water; practically insoluble in Spirit.

Dose.—5 to 10 grains, in solution.

Incompatibles.—Mineral Acids, and Acid Salts; Alkalies (Potass and Soda); Lime Water; Vegetable preparations containing Tannic Acid.

Preparations.—None.

·**Ferri et Ammonii Citras** (Citrate of Iron and Ammonium).—Prepared by dissolving freshly precipitated, and washed, Ferric Hydrate, in a solution of Citric Acid; adding Solution of Ammonia till slightly alkaline, evaporating, drying in thin layers on porcelain or glass plates, and preserving in a stoppered bottle. Its solution is feebly acid.

Characters.—Thin transparent scales, of a *deep red colour*. Somewhat *deliquescent* on exposure to the air. (*Compare with Ferrum Tartaratum.*)

Solubility.—10 in 5 of Water; practically insoluble in Spirit.

Dose.—5 to 10 grains, in solution.

Incompatibles.—Mineral Acids; fixed Alkalies; Vegetable preparations containing Tannic Acid.

Preparation :—

Vinum Ferri Citratis.—Citrate of Iron and Ammonium dissolved in Orange Wine.

(1 grain in each drachm.)

Dose.—1 to 4 drachms.

·**Ferri et Quininæ Citras** (Citrate of Iron and Quinine). —Freshly precipitated Ferric Hydrate and Quinine are dissolved in a warm solution of Citric Acid, the solution nearly neutralized with Ammonia, evaporated, and dried in thin layers on glass, or porcelain plates. Its solution is feebly acid.

(1 of Quinine in 6¼.)

Characters.—In thin transparent scales of a greenish golden-yellow colour; somewhat deliquescent on exposure to the air.

Solubility.—2 in 1 of Water; practically insoluble in Rectified Spirit.

Dose.—5 to 10 grains, in solution.

Incompatibles.—Alkalies and their Carbonates; Vegetable Preparations containing Tannic Acid: Potassium Citrate.

Preparations.—None.

·**Alumen** (Alum).—Double Sulphate of Aluminium and Potassium (Potash Alum), or double Sulphate of Aluminium and Ammonium (Ammonia Alum). Both kinds are official, and may be used indifferently, except for the preparation of Alumen Exsiccatum, for which Potash Alum must be used. Its solution is acid.

Characters.—In large colourless transparent crystalline masses, exhibiting the faces of the regular octahedron, and having an acid *sweetish* astringent taste. Ammonia Alum is distinguished by its giving off Ammonia Gas when heated with Caustic Potash.

Solubility.—1 in 11 of Water; Potash Alum 1 in 3 of Glycerine; Ammonia Alum 1 in 1¼ of Glycerine. Both are insoluble in Spirit.

Dose.—5 to 10 grains, in solution. A drachm, or more, is sometimes given as an emetic.

Incompatibles.—Alkalies; Lime Water; Salts of Calcium, Barium, Strontium, Lead and Mercury; Tartrates; Tannic Acid, and Vegetable Preparations containing it.

Preparation:—

Glycerinum Aluminis.—Alum (Potash or Ammonia), Water and Glycerine. (about 1 in 6.)

From Potash Alum is also prepared,—**Alumen Exsiccatum** (*vide infra*).

Alumen Exsiccatum (Dried Alum).—Potash Alum dried by heat, till it has lost about 46 per cent. of its weight. Ammonia Alum cannot be used as it is decomposed by heat.

Characters.—A white opaque powder, slowly but completely soluble in Water. It absorbs moisture from the air, and must be kept in a well stoppered bottle, as it is used chiefly for this absorbent property.

Solubility.—About 1 in 22 of Water. Insoluble in Spirit.

Dose.—Not given internally.

Preparations.—None.

Acidum Arseniosum (Arsenious Acid; Arsenious Anhydride; Arsenic).—Arsenious Oxide obtained by roasting Arsenical Ores, and purifying by sublimation. It is not an Acid but an Anhydride.

Characters.—A heavy white crystalline powder, or more frequently, in sublimed masses (cakes, with one surface smooth and slightly convex) presenting strata due to the existence of layers of different degrees of opacity. When broken, its fractured surface usually has the appearance of porcelain, but when quite fresh it is almost or quite transparent. When slowly sublimed in a glass tube it forms minute brilliant and transparent octahedral crystals.

Solubility.—1 in 100 of Water; 1 in 500 of Spirit; more soluble in aqueous solutions of Alkaline Hydrates and Carbonates, and in diluted Hydrochloric Acid; 1 in 8 of Glycerine.

Dose.—$\frac{1}{60}$ to $\frac{1}{15}$ grain, in dilute solution or in pill with Sugar of Milk and Glucose. Best given after meals.

Incompatibles.—Magnesia; Lime Water; Sulphides: Vegetable preparations containing Tannic Acid. Acid Salts of Iron are incompatible with Liquor Arsenicalis.

Preparations:—

(1) **Liquor Arsenicalis** (Fowler's Solution).—An *alkaline* solution of Arsenious Acid in Water, with Potassium Carbonate, coloured red with Compound Tincture of Lavender.

Dose.—2 to 8 minims. (1 of Arsenious Acid in 100.)

Note.—It is incompatible with *acid* preparations of Iron, Liquor Strychninæ Hydrochlorici, and acid preparations generally.

(2) **Liquor Arsenici Hydrochloricus.** — An *acid*

solution of Arsenious Acid in Water with Hydrochloric Acid; not coloured.

Dose.—2 to 8 minims. (1 of Arsenious Acid in 100.)

Note.—May be given with acid preparations of Iron, &c. Resembles De Valangin's Solution, but is 3 times as strong.

Arsenii Iodidum (Iodide of Arsenium).—Obtained by the direct union of Iodine and Metallic Arsenium. Its fresh solution is neutral.

Solubility.—1 in 11 of Water; 1 in 42 of Spirit.

Dose.—$\frac{1}{20}$ to $\frac{1}{5}$ grain in pill with Sugar of Milk and Glucose; its aqueous solution gradually decomposes into Hydriodic and Arsenious Acids.

Incompatibles.—Acids and Acid Salts; Sulphides; most Vegetable Preparations.

Preparation:—

Liquor Arsenii et Hydrargyri Iodidi (Donovan's Solution).—An aqueous solution of the Iodides of Arsenium and Mercury. (1 of each Iodide in 100.) *Dose.*—5 to 20 minims.

Antimonium Tartaratum (Tartar Emetic; Potassio-Tartrate of Antimony).—An Oxy-tartrate of Antimony and Potassium, prepared by boiling together in Water, Antimonious Oxide and Acid Tartrate of Potassium (Cream of Tartar), filtering, evaporating and crystallizing.

Solubility.—1 in 17 of Water; practically insoluble in Spirit.

Dose.—As a diaphoretic, $\frac{1}{24}$ to $\frac{1}{8}$ grain; as an emetic 1 to 2 grains, always in solution.

Incompatibles.—Alkalies and Mineral Acids; Lead Salts; Gallic and Tannic Acids, and Vegetable Preparations containing them.

Preparation:—

Vinum Antimoniale.—Tartarated Antimony dissolved in Sherry. (1 in 219.)

Dose.—10 to 30 minims; as an emetic, 2 to 4 drachms.

Note.—Each drachm contains ¼ grain.

Bismuthi Subnitras (Subnitrate of Bismuth).—An Oxynitrate of Bismuth prepared by pouring a concentrated solution of Bismuth Nitrate into a large volume of Water; collecting and washing the precipitated Subnitrate. It is an *acid* Salt.

Solubility.—Insoluble in Water Glycerine, or Spirit.

Dose.—5 to 20 grains, in suspension †.

Incompatibles.—Alkalies, and their Carbonates and Bicarbonates; Sulphides. Mucilage of Acacia causes it to cake.

Preparations.—None.

Bismuthi Carbonas.—Oxy-Carbonate of Bismuth, obtained by pouring a solution of Bismuth Nitrate into a solution of Ammonium Carbonate, and washing and drying the precipitate.

Solubility.—Insoluble in Water, Spirit, and Glycerine.

Dose.—5 to 20 grains, in suspension. (*See footnote*, Bismuthi Subnitras.)

Incompatibles.—Acids and Acid Salts; Sulphides, Mucilage of Acacia causes it to cake.

Preparation:—

Trochiscus Bismuthi Compositus.—Lozenges composed of Bismuth Carbonate, Carbonates of Magnesium and Calcium, Rose Lozenge Basis.

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† Best suspended by 10 grains of Compound Powder of Tragacanth, and 30 minims of Glycerine in 1 ounce of Water.

Dose.—1 to 6. (2 grs. in each Lozenge.)

Bismuthi Salicylas.—Obtained by the action of Sodium Salicylate on Bismuth Nitrate.

Solubility.—Insoluble in Water and Spirit.

Dose.—5 to 20 grains in cachets, or suspended in water. (*See footnote*, p. 56.)

Preparations.—None.

Note.—Bismuth Salicylate is dissociated by water, (Salicylic Acid being liberated), and is then incompatible with alkaline carbonates. If a Bismuth Salt, a Salicylate, and an Alkaline Carbonate are required together, Bismuth Carbonate, Sodium Salicylate, and Sodium, or Potassium, Bicarbonate should be prescribed.

ORGANIC MATERIA MEDICA.

PART I.

CARBON COMPOUNDS, CHIEFLY SYNTHETIC.

*Substances marked * have to be recognised.*

***Spiritus Rectificatus** (Rectified Spirit of Wine).—Alcohol (Ethylic) with 10 per cent. of Water; obtained by the distillation of fermented saccharine liquids. Sp. Gr., 0.834.

Characters.—Colourless, transparent, very mobile and inflammable liquid, with a pleasant characteristic odour, and a strong spirituous burning taste.

Dose.—Given only in its preparations.

Preparations:—

(1) **Diluted Alcohols.**—Four diluted alcohols are official. They are prepared by diluting Spiritus Rectificatus with water, and contain 70, 60, 45 and 20 per cent. (by volume) of alcohol respectively.

Note.—Rectified Spirit and Diluted Alcohols are used in the preparation of all **Tinctures** and **Spirits** (except Spiritus Vini Gallici), and in many other compounds in the British Pharmacopœia.

(2) **Alcohol Absolutum** (Absolute Alcohol).—Alcohol with not more than 1 per cent. of Water. Obtained by dehydrating Rectified Spirit with Anhydrous Potassium Carbonate and freshly calcined Calcium Chloride, and re-distilling. Sp. Gr., from 0.794 to 0.7969.

Acidum Aceticum (Strong Acetic Acid).—Obtained from wood by destructive distillation and subsequently purified. Contains 33 per cent. of real Acetic Acid.

Dose.—Given only in diluted form.

Preparations:—

(1) Acidum Aceticum Dilutum.—Acetic Acid and Water. (1 of Acid in 8.)

Dose.—½ to 2 drachms, further diluted.

(2) It enters into the composition of the following preparations, most of which are described elsewhere:—

Acetum Scillæ.
,, Ipecacuanhæ.
Oxymel, and Oxymel Scillæ.
Syrupus Scillæ.

Acidum Aceticum Glaciale (Glacial Acetic Acid).—Nearly pure Acetic Acid, containing 99 per cent. of real Acid. Obtained by distillation from Anhydrous Sodium Acetate and Sulphuric Acid. It is three times as strong as Acidum Aceticum.

Dose.—Not given internally.

Preparations:—

(1) Acetum Cantharidis (*see Cantharis*).

(2) Linimentum Terebinthinæ Aceticum (*see Oleum Terebinthinæ*).

(3) Liquor Ferri Acetatis.

***Ether** (Sulphuric Ether, Ethylic Ether).—Obtained by distilling Rectified Spirit with Sulphuric Acid, and partly purifying by means of Calcium Chloride and Calcium Hydrate, and re-distillation. Contains 92 per cent. by volume of Pure Ether, about 8 per cent. of Alcohol and a little Water. Sp. Gr., 0.735.

Characters.—A light colourless, mobile, very volatile and inflammable liquid, with a characteristic odour.

Solubility.—1 in 10 of Water. It mixes in all proportions with Rectified Spirit, Chloroform, Volatile and Fixed Oils. It dissolves Mercury Perchloride. Iodine, Iodoform, Bromine, Camphor, Fats, many Resins and Balsams, Sulphur (slightly), Phosphorus (slightly), Pyroxylin, and most Alkaloids (not their Salts).

Dose.—10 to 30 minims, in water, for repeated administration; 40 to 60 minims for single administration.

Preparations:—

(1) **Spiritus Ætheris.**—Ether and Rectified Spirit. (1 in 3.)

Dose.—20 to 40 minims, in water, for repeated administration; 60 to 90 minims for single administration.

(2) **Spiritus Ætheris Compositus.**—Ether, "Oil of Wine," and Rectified Spirit. (1 of Ether in 3.)

Dose.—Same as Spiritus Ætheris.

(3) **Æther Purificatus.**—Ether freed from Alcohol and Water, by twice shaking up with water, decanting the Ether, mixing it with Calcium Chloride and freshly prepared Lime and re-distilling. Sp. Gr. .720.

Note.—Used for producing general anæsthesia.

(4) **Collodium** (*vide infra*).

(5) **Tinctura Chloroformi et Morphinæ Composita** (*vide Morphinæ Hydrochloridum*).

Collodium (Collodion).—Pyroxylin dissolved in a mixture of Ether and Rectified Spirit. Only used externally.

Preparations :—

(1) **Collodium Flexile** (Flexible Collodion).—Collodion, Canada Turpentine and Castor Oil.

(2) **Collodiom Vesicans** (*see Cantharis*).

***Chloroformum** (Chloroform).—Obtained by distilling Rectified Spirit with Slaked Lime and Chlorinated Lime, and purifying the product by washing with diluted Sulphuric Acid, and re-distilling with Calcium Chloride and Slaked Lime. Sufficient Absolute Alcohol is then added (Pure Chloroform does not keep well) to make the Sp. Gr. not less than 1.490, or more than 1.495.

Characters.—A heavy colourless liquid, with an agreeable ethereal odour, and hot sweet taste.

Solubility.—1 in 200 of Water; 10 in 7 of Rectified Spirit; freely in Oils, and in Ether. Insoluble in Glycerine. It dissolves Gutta Percha, India-rubber, Camphor, many Resins, Balsams, and Alkaloids (not their Salts), Iodine, Bromine and Iodoform.

Dose.—1 to 5 minims, in solution.

Preparations :—

(1) **Aqua Chloroformi.**—Chloroform and Water. (1 in 400.)

Dose.—½ to 2 ounces.

(2) **Spiritus Chloroformi** (Chloric Ether).—Chloroform and Rectified Spirit. (1 in 20.)

Dose.—5 to 20 minims, diluted, for repeated administration; 30 to 40 minims for single administration.

(3) **Tinctura Chloroformi et Morphinæ Composita.**
Dose.—5 to 15 minims. (1 of Chloroform in 13½.)

Note.—For particulars of this preparation *see Morphinæ Hydrochloridum.*

(4) **Linimentum Chloroformi.** — Chloroform and Liniment of Camphor. (1 in 2.)

***Iodoformum.**—Obtained by the action of Iodine on an alcoholic solution of Potassium Carbonate, or Hydrate.

Characters.—Shining, lemon-yellow, crystalline scales, having a persistent and disagreeable odour.

Solubility.—1 in 7 of Ether; 1 in 14 of Chloroform; 1 in 120 of Rectified Spirit; 1 in 10 of Collodion; 1 in 14 of Oil of Eucalyptus; 1 in 60 of Fats, Oils and Soft Paraffin; 1 in 100 of Glycerine. Practically insoluble in Water.

Dose.—½ to 3 grains, in pill, with Glucose.

Preparations:—

(1) **Suppositoria Iodoformi.**—Iodoform and Cocoa-Butter. (3 grains in each Suppository.)

(2) **Unguentum Iodoformi.**—Iodoform and Yellow Paraffin Ointment. (1 in 10.)

Note.—Oil of Geranium disguises the odour of Iodoform.

***Paraldehydum** (Paraldehyde).—A polymer of Aldehyde obtained by the action of acids on Ethylic Aldehyde.

Characters.—A clear, colourless, mobile liquid, with a peculiar ethereal, somewhat unpleasant, odour, and burning taste.

Solubility.—Soluble in Rectified Spirit and Ether in all proportions; 1 in 10 of Water.

Dose.—½ to 2 drachms, in solution.

Preparations.—None.

*__Chloral Hydras__ (Hydrate of Chloral).—Chloral, produced by the action of dry Chlorine Gas on anhydrous Alcohol, purified by treatment with Sulphuric Acid and Lime, used successively, and then converted into the solid hydrate by addition of Water. Its solution is neutral, or but faintly acid.

Characters.—In colourless crystals, not deliquescent, with a characteristic pungent but not acrid odour, and a pungent and rather bitter taste.

Solubility.—4 in 1 of Water; 5 in 1 of Rectified Spirit; 2 in 1 of Ether or Glycerine; 1 in 1 of Olive Oil; 1 in 3 of Chloroform. Mixed with an equal weight of Camphor, Menthol, or Thymol, it liquefies.

Dose.—5 to 20 grains, in dilute solution.

Incompatibles.—Alkalies; Salts of Quinine.

Note.—Alkalies decompose it into Chloroform, and Formic Acid.

Preparation:—

Syrupus Chloral.—Hydrate of Chloral, Syrup and Water. (1 gr. in 6 minims.)

Dose.—½ to 2 drachms, diluted.

Butyl-Chloral Hydras (sometimes, but wrongly, called Croton Chloral Hydrate).—Butyl-Chloral, produced by the action of dry Chlorine Gas on Aldehyde cooled to 14° F.; separated by fractional distillation and converted into the solid Hydrate by addition of Water. Its solution is neutral, or but slightly acid.

Solubility.—1 in 44 of Water; 1 in 1 of Glycerine; 5 in 3 of Rectified Spirit Mixed with twice its weight of Menthol, or with Phenazonum (Antipyrin), it liquefies.

Dose.—5 to 20 grains, in solution or in a cachet.

Incompatibles.—Same as Chloral Hydras.

Preparations.—None.

Sulphonal.—Crystalline Di-ethylsulphon-di-methylmethane, produced by oxidation of a mixture of Ethyl-mercaptan and Acetone. It may be regarded as Methane in which the 4 Hydrogen atoms have been replaced by 2 Ethyl-sulphon, and 2 Methyl groups.

Solubility.—1 in 500 of cold Water: 1 in 15 of Boiling Water; 1 in 50 of Spirit; freely in hot Spirit.

Dose.—10 to 30 grains, in hot Spirit and Water, or in suspension in Mucilage, or in cachets. When given un-dissolved it should be in fine powder.

Preparations.—None.

***Spiritus Ætheris Nitrosi** (Sweet Spirit of Nitre).—An alcoholic solution containing Ethyl Nitrite, Aldehyde, and other substances, obtained by distilling a mixture of Rectified Spirit, Nitric and Sulphuric Acids with Copper Wire.

Characters.—A transparent, nearly colourless (very slight yellow tinge), mobile, inflammable liquid, with a peculiar penetrating apple-like odour, and a cool, sharp, sweetish taste.

Dose.—20 to 40 minims, diluted, for repeated administration; 60 to 90 minims for single administration.

Incompatibles.—Iodide of Potassium (unless in combination with an alkali or alkaline bicarbonate); Sulphate of Iron; Phenazone (Antipyrin); Guaiacum; Tannic and Gallic Acids; Salicylates.

Preparations.—None.

Liquor Ethyl Nitritis.—A mixture of 95 volumes of Absolute Alcohol and 5 volumes of Glycerine containing 2½ to 3 per cent., by weight, of Ethyl Nitrite. It is used as a substitute for Spiritus Ætheris Nitrosi.

Dose.—20 to 60 minims, diluted.

Amyl Nitris (Nitrite of Amyl).—An ethereal yellowish liquid consisting chiefly of Iso-Amyl Nitrite, obtained by the action of Nitrous Acid on Amylic Alcohol. It deteriorates, and finally becomes inert, when exposed to the air. Best kept in hermetically sealed glass capsules, in a dark, cool place.

Solubility.—Insoluble in Water; soluble in all proportions in Rectified Spirit, Ether, or Chloroform.

Dose.—By inhalation, the vapour of 2 to 5 minims; but in mixtures to be swallowed, from ½ to 1 minim. Must be used with caution.

Preparations.—None.

***Glycerinum** (Glycerine).—Glyceryl-trihydrate, obtained by decomposing fats and fixed oils by means of super-heated steam, and separating from the resulting fatty acids. It is neutral.

Characters — A clear, colourless viscid liquid, oily to the touch, without odour, and of a sweet taste.

Solubility.—Soluble in all proportions in Water and Spirit; insoluble in Chloroform, Ether and Oils. It is a useful solvent for many substances; it dissolves its own weight of Borax, and 3 times its weight of Carbolic Acid; it also dissolves Iodine, Bromine, Salicylic, Tannic and Gallic Acids, the

Salts of most Alkaloids, and a large number of Inorganic Salts.

Dose.—1 to 2 drachms, diluted.

Incompatibles.—Powerful Oxidizing Agents, such as Chromic Acid, Potassium Bichromate, Potassium Permanganate, &c.

Preparations :—

(1) **Glycerinum Acidi Carbolici.**
(2) ,, ,, **Borici.**
(3) ,, ,, **Tannici.** } *See preparations of these Acids.*
(4) ,, **Aluminis.** *See Alumen.*
(5) ,, **Amyli** (1 of Starch in 8½).
(6) ,, **Boracis.** *See Borax.*
(7) ,, **Pepsini.**
(8) ,, **Plumbi Subacetatis.** *q.v.*
(9) ,, **Tragacanth.** *Used as an excipient for pills.*

(10) **Suppositoria Glycerini.**—Glycerine, Gelatine and Water. (70 per cent.)
Moulded into suppositories weighing 30, 60, or 120 grains.

Note.—Glycerine also forms an ingredient in several other official preparations.

Nitro-Glycerinum (Trinitrin).—The Tri-nitrate of Glyceryl, obtained by dropping Glycerine into a mixture of strong Nitric and Sulphuric Acids.

Solubility.—Slightly in Water; freely in Spirit, Ether, and Oils.

Dose.—$\frac{1}{200}$ to $\frac{1}{50}$ grain, cautiously increased, in weak alcoholic solution or in tablets.

Preparations :—

(1) **Liquor Trinitrini** (Liquor Nitro-Glycerini).—Nitroglycerine and Rectified Spirit. (1 in 100.)
Dose.—½ to 2 minims.

(2) **Tabellæ Trinitrini.** — Tablets of Chocolate weighing 5 grains, each containing pure Nitroglycerine $\frac{1}{100}$ grain.

Dose.—1 or 2 tablets.

***Creosotum** (Creosote).—A mixture of Guaiacol, Creosol, and other Phenols; obtained in the distillation of Wood Tar.

Characters.—A colourless or yellowish highly refractive liquid, with a strong characteristic tarry odour, and an acrid taste.

Solubility.—1 in 150 (about) of Water; freely in Rectified Spirit, Ether, Chloroform and Glycerine.

Incompatibles.—Salts of Silver.

Dose.—1 to 5 minims, in capsules, mixture, or in pills with powdered soap and liquorice root.

Preparations :—

(1) **Mistura Creosoti.**—Creosote, Spirit of Juniper, Syrup and Water.

(1 minim of Creosote in 1 ounce.)

Dose.—$\frac{1}{2}$ to 1 ounce.

(2) **Unguentum Creosoti.**—Creosote, Hard and Soft Paraffins. (1 in 10.)

***Acidum Carbolicum** (Phenol).—Phenyl Alcohol obtained from coal-tar oil by fractional distillation and subsequent purification. It is neutral, and is an Alcohol, not an Acid.

Characters.—In separate pulverulent crystals, or in acicular crystalline masses, with a peculiar characteristic odour and sweetish taste; colourless, or with slight reddish or brownish tinge. Its solution coagulates albumen and collodion.

Solubility.—It remains liquid if melted with 5 to 10 per cent. of water, and 1 of the liquefied Acid dissolves in about 14 of water at 60° F. The crystalline Acid is soluble 1 in 20 of Soft Paraffin; freely in Spirit, Ether, Chloroform, Glycerine, Fixed and Volatile Oils, and Fats.

Dose.—1 to 3 grains, in glycerine, or in coated pill.

Incompatibles.—Ferric Chloride; Subacetate of Lead; Collodion; Albumen.

Preparations:—

(1) **Acidum Carbolicum Liquefactum.** — Carbolic Acid liquefied by the addition of 10 per cent., by weight, of Water.

Dose.—1 to 3 minims.

(2) **Glycerinum Acidi Carbolici.**—Carbolic Acid, and Glycerine. (1 in 5.)

Dose.—5 to 10 minims, diluted.

(3) **Suppositoria Acidi Carbolici.**—Carbolic Acid, Cocoa Butter, and White Beeswax.
(1 grain in each Suppository.)

(4) **Unguentum Acidi Carbolici.**—Carbolic Acid, Glycerine, White Paraffin Ointment. (1 in 25.)

Note.—Solutions of Carbolic Acid 1 in 20, and 1 in 40 of Water, are the commonly used "Carbolic, or Phenol, Lotions."

(5) **Trochiscus Acidi Carbolici.**—Carbolic Acid and Tolu Lozenge Basis. (1 grain in each Lozenge.)

Dose.—1 to 3.

***Acidum Salicylicum** (Salicylic Acid).—Prepared by passing Carbon Dioxide into a mixture of Carbolic Acid and Caustic Soda at a high temperature, and decomposing the resulting Sodium Salicylate with an Acid, and purifying; or by distilling Oil of Wintergreen (which is chiefly Methyl Salicylate) or Oil of Sweet Birch, with Caustic Potash, and decomposing the residue (Potassium Salicylate) with Hydrochloric Acid, and purifying. The products from Oils of Wintergreen and Sweet Birch are called "natural" Salicylic Acid, and are preferred.

Characters.—In white (sometimes with a very faint pink tinge) acicular crystals, without odour, but irritating to the nostrils; taste first sweetish then acid, leaving a burning sensation in the throat.

Solubility.—1 in 550 of Water; 1 in 3½ of Rectified Spirit; 1 in 2 of Ether; 1 in 195 of Glycerine. Solutions of Borax, Ammonium Acetate and Potassium Citrate also dissolve it, but with decomposition.

Dose.—5 to 20 grains, in cachets.

Incompatibles.—Ammonia; Carbonate of Ammonium; Salts of Iron; Spirit of Nitrous Ether.

Preparation:—

Unguentum Acidi Salicylici.—Salicylic Acid, and White Paraffin Ointment. (1 in 50.)

Sodii Salicylas (Sodium Salicylate).—Obtained by the action of Salicylic Acid on Sodium Carbonate, or on Caustic Soda. Its solution is neutral or faintly acid.

Solubility.—1 in 1 of Water; 1 in 5 of Spirit.

Dose.—10 to 30 grains, in solution.

Incompatibles.—Preparations of Ammonia and its Carbonate; Iron Salts; Acids.

Preparations.—None.

Salol (Phenyl Salicylate).—Prepared by the action of Salicylic Acid on Phenol.

Solubility.—1 in 20 of Rectified Spirit; 2 in 1 of Ether; 3 in 1 of Chloroform. Insoluble in Water.

Dose.—5 to 15 grains, in cachets, or suspended in water with Mucilage.

Incompatibles.—Alkalies, and Iron Salts.

Preparations.—None.

Phenacetinum (Para-acet-phenetidin).—A crystalline substance produced by the action of Glacial Acetic Acid on Para-phenetidin, a body obtained from Phenol.

Solubility.—Sparingly soluble in Water; freely in hot Spirit; 1 in 21 of cold Spirit. Insoluble in acid or alkaline solutions.

Dose.—5 to 10 grains, in cachet, or suspended in Water with Mucilage.

Preparations.—None.

Phenazonum (Antipyrine).—Phenyl-dimethyl-iso-pyrazolone, obtained by the action of Phenyl-hydrazine on Aceto-acetic Ether, and *methylating*† the product. Its solution is neutral.

Solubility.—About 1 in 1 of Water, Spirit and Chloroform.

Dose.—5 to 20 grains, in solution.

Incompatibles.—Salts of Iron; Spirit of Nitrous Ether, and other Nitrites; Tannic Acid; Cinchona Preparations.

Preparations.—None.

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† "Methylating" is the introducing of one or more Methyl (CH_3) groups into a compound.

Acetanilidum (Antifebrin; Phenyl Acetamide).—A crystalline substance obtained by boiling Aniline with Glacial Acetic Acid, and purifying the product. Its solution is neutral.

Solubility.—1 in 190 of Water; freely in Spirit, Ether and Chloroform.

Dose.—1 to 3 grains, in suspension, or in cachet.

Preparations.—None.

***Acidum Hydrocyanicum Dilutum.**—Prepared by distilling diluted Sulphuric Acid with Ferro-cyanide of Potassium. It contains 2 per cent. by weight of pure Hydrocyanic Acid.

Characters.—A colourless liquid with a peculiar odour. It only slightly and transiently reddens litmus paper.

Dose.—2 to 6 minims, diluted.

Incompatibles.—Salts of Silver, Copper, and Iron; Mercuric Oxide; Sulphides.

Preparation:—

Tinctura Chloroformi et Morphinæ Composita. *See Morphinæ Hydrochloridum.*
(½ minim in 10 minims.)

ORGANIC MATERIA MEDICA.

PART II.

VEGETABLE SUBSTANCES.

*Substances marked * have to be recognised.*

***Aconiti Radix** (Aconite Root).—The dried root of *Aconitum Napellus* (Monkshood), collected in autumn from British plants.

Characters.—A dark brown *conical* root, usually 2 or 3 inches long, and ½ to ¾ inch thick at upper extremity, *rapidly tapering*. A very small piece cautiously chewed, causes a sensation of tingling, followed by numbness, of the tongue.

Composition.—Aconitine (an alkaloid) is the active principle; it is combined with Aconitic Acid.

Dose.—The root is not given internally, except in preparations.

Preparations:—

(1) Aconitina, the active principle.

Dose.—$\frac{1}{1000}$ to $\frac{1}{500}$ grain (rarely given).

Note.—There is an Unguentum Aconitinæ containing 1 to 50 of a mixture of Lard and Oleic Acid.

(2) Linimentum Aconiti.—Aconite Root, Camphor, and Rectified Spirit. (1 in 1½.)

(3) Tinctura Aconiti.—Aconite Root, and 70 per cent. Alcohol. Percolate. (1 in 20.)

Dose.—5 to 15 minims; or 2 to 5 minims if frequently repeated.

'**Opium.**—The juice obtained by incision from the unripe capsules of *Papaver somniferum* (White Poppy), dried by spontaneous evaporation. When dried and powdered it must contain *about* 10 *per cent. of Morphine.*

Characters.—In rounded, irregularly formed, or flattened masses, weighing from about ½ to 2 lbs., usually covered with portions of poppy leaves, and scattered over with the reddish-brown chaffy fruits of a species of Rumex. When fresh, plastic, and internally reddish- or chestnut-brown; but becoming harder by keeping, and darkening to blackish-brown. Odour strong, peculiar, narcotic; taste nauseously bitter.

Composition.—Several alkaloids, Morphine, Codeine, Thebaine, Papaverine, Narcotine, Narceine, &c. (only Morphine and Codeine are official); some neutral principles; Meconic and other Acids; Resin, Gum, Oil, and other plant constituents.

Dose.—½ to 2 grains, in pill.

Incompatibles.—Alkalies and their Carbonates; Lime Water; Salts of Lead, Iron, Copper, Mercury, and Zinc; Tannic Acid.

Preparations:—

(1) Salts of Morphine. (*See below.*)

(2) Codeina. (*See below.*)

(3) Extractum Opii, a *Standardized Extract.*—Opium is macerated in water, and the filtered solution is evaporated till the resulting extract weighs half the weight of the Opium used. *Contains* 20 *per cent. of Morphine.*

(2 of Opium give 1 of Extract.)

Dose.—¼ to 1 grain.

Preparation (from Extract. Opii).—

Extractum Opii Liquidum.—Extract of Opium, Water, and Rectified Spirit.

(1 of Extract in 26⅔ = ·75 per cent. of Morphine.)

Dose.—5 to 30 minims.

(4) **Pilula Saponis Composita.**—Opium, Hard Soap, Syrup of Glucose. (1 in 5.)

Dose.—2 to 4 grains.

(5) **Pilula Plumbi cum Opio.**—Opium, Lead Acetate, and Syrup of Glucose. (1 in 8.)

Dose.—2 to 4 grains.

(6) **Pulvis Ipecacuanhæ Compositus** (Dover's Powder).—Opium, Ipecacuanha, and Potassium Sulphate. (1 in 10.)

Dose.—5 to 15 grains.

(7) **Pulvis Opii Compositus.**—Opium, Black Pepper, Ginger, Caraway, and Tragacanth. (1 in 10.)

Dose.—2 to 10 grains.

(8) **Emplastrum Opii.**—Opium, and Resin Plaster. (1 in 10.)

(9) **Tinctura Opii** (Laudanum).—Opium, Rectified Spirit and Water. (1 grain in 13⅓ minims.)

Dose.—5 to 15 minims for repeated administration; 20 to 30 minims for single administration.

Note.—Tincture of Opium is *standardized* to contain ·75 per cent. of Morphine.

(10) **Unguentum Gallæ cum Opio.**—Opium, and Ointment of Galls. (1 in 13⅓.)

(11) **Suppositoria Plumbi Composita.**—Opium, Lead Acetate, and Cocoa Butter. (1 in 15.)

(12) **Pulvis Kino Compositus.**—Opium, Kino, and Cinnamon. (1 in 20.)

Dose.—5 to 20 grains.

(13) **Pilula Ipecacuanhæ cum Scilla.**—Compound Ipecacuanha Powder (*see above*), Squill, Ammoniacum, and Syrup of Glucose.
(1 of Opium in 20.)
Dose.—4 to 8 grains.

(14) **Linimentum Opii.** — Tincture of Opium, and Soap Liniment in equal parts.
(About 1 of Opium in 27.)

(15) **Pulvis Cretæ Aromaticus cum Opio.**—Opium, and Aromatic Chalk Powder. (1 in 40.)
Dose.—10 to 40 grains.

(16) **Tinctura Opii Ammoniata** (Scotch Paregoric).—Tincture of Opium, Benzoic Acid, Oil of Anise, Solution of Ammonia, and Rectified Spirit.
(1 grain of Opium in 96 minims.)
Dose.—½ to 1 drachm.

(17) **Tinctura Camphoræ Composita** (Paregoric Elixir).—Tincture of Opium, Camphor, Benzoic Acid, Oil of Anise, and 60 per cent. Alcohol
(1 gr. of Opium in 240 minims.)
Dose.—30 to 60 minims.

Morphinæ Hydrochloridum.—The Hydrochloride of an alkaloid prepared from Opium by (1) macerating it in Water; (2) precipitating Meconic Acid from the solution by means of Calcium Chloride; (3) decolourizing the solution with Animal Charcoal, &c., and filtering; (4) adding Ammonia to precipitate Morphine; (5) dissolving the Morphine in hot water with dilute Hydrochloric Acid to form a neutral solution, and crystallizing.

Solubility.—1 in 24 of Water; 1 in 50 of Rectified Spirit; 1 in 8 of Glycerine; insoluble in Ether.

Dose.—⅛ to ½ grain, in pill, or in solution.

Incompatibles.—Alkalies; vegetable astringent preparations.

Preparations:—

(1) **Liquor Morphinæ Hydrochloridi.** — Morphine Hydrochloride, Diluted Hydrochloric Acid, †Rectified Spirit and Water. (1 in 100.)

Dose.—10 to 60 minims.

(2) **Suppositoria Morphinæ.**—Morphine Hydrochloride, and Cocoa Butter. ($\frac{1}{4}$ gr. in each Suppository.)

(3) **Tinctura Chloroformi et Morphinæ Composita.**—Chloroform, Rectified Spirit, Morphine Hydrochloride, Diluted Hydrocyanic Acid, Oil of Peppermint, Tincture of Capsicum, Tincture of Indian Hemp and Glycerine.

Chloroform	$\frac{3}{4}$ minim	in every 10 minims.
Morphine Hydrochloride	$\frac{1}{11}$ grain	
Diluted Hydrocyanic Acid	$\frac{1}{2}$ minim	

Dose.—5 to 15 minims, diluted.

Note.—It is intended as a substitute for the popular nostrum "Chlorodyne."

(4) **Trochiscus Morphinæ.**—Morphine Hydrochloride and Tolu, Lozenge Basis.

Dose.—1 to 6. ($\frac{1}{36}$ gr. in each Lozenge.)

(5) **Trochiscus Morphinæ et Ipecacuanhæ.**—Same as above with addition of $\frac{1}{12}$ grain of Ipecacuanha to each Lozenge.

Dose.—1 to 6.

Note.—1 grain Morphine Hydrochloride = $9\frac{1}{2}$ grs. of Opium = 8 grs. of Dried and Powdered Opium = $4\frac{7}{8}$ grs. of Extract of Opium = 117 minims of Tincture of Opium.

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† Spirit is used in this and in other solutions of Alkaloid Salts, for the purpose of preserving them, as they readily undergo decomposition.

Morphinæ Tartras.—Prepared by combining Morphine with Tartaric Acid in proper proportions.

Solubility—1 in 10 of Water; sparingly in Rectified Spirit.

Dose.— } *Same as Morphinæ Hydrochloridum.*
Incompatibles.— }

Preparation:—

Injectio Morphinæ Hypodermica.—Morphine Tartrate and Water. (5 in 100.)

Dose.—2 to 5 minims, *by subcutaneous injection.*

Note.—Contains 1 grain of Morphine Tartrate in 22 minims.

Liquor Morphinæ Tartratis.—Morphine Tartrate, Rectified Spirit and Water.

Dose.—10 to 60 minims. (1 in 100.)

Morphinæ Acetas.—Morphine (freshly precipitated from a solution of Morphine Hydrochloride by Ammonia) is diffused in water, and dissolved by means of Acetic Acid; the solution is evaporated and the salt dried by slight heat. It must be kept in a well-stoppered bottle, as it gradually loses Acetic Acid and becomes basic. This loss of acid renders the salt more potent, by increasing the relative proportion of alkaloid.

Solubility.—When fresh, 1 in 2½ of Water; 1 in 100 of Spirit; 1 in 5 of Glycerine. It is only partially soluble when basic, and requires the addition of a little Acetic Acid.

Dose.—⅛ to ½ grain.

Incompatibles.—*Same as Morphinæ Hydrochloridum.*

Preparation:—

Liquor Morphinæ Acetatis.—Morphine Acetate, Diluted Acetic Acid, Rectified Spirit and Water. (1 in 100.)

Dose.—10 to 60 minims.

Codeina.—An alkaloid obtained from the ammoniacal liquid left after the preparation of Morphine from Opium, by treating it with Caustic Potash, purifying the precipitate by dissolving in Ether and re-crystallizing, or by *methylating* † Morphine.

Solubility.—1 in 80 of Water; 1 in 2 of Rectified Spirit.

Dose.—$\frac{1}{4}$ to 2 grains, in solution, or in pill.

Preparations.—None.

Codeinæ Phosphas.—The most soluble salt of Codeine, obtained by treating the alkaloid with Phosphoric Acid.

Solubility.—1 in 4 of Water.

Dose.—$\frac{1}{4}$ to 2 grains in solution.

Preparation:—

Syrupus Codeinæ.—Codeine Phosphate, Water and Syrup. ($\frac{1}{4}$ grain in each drachm.)

Dose.—$\frac{1}{2}$ to 2 drachms.

Apomorphinæ Hydrochloridum.—Obtained by heating either Morphine or Codeine in a sealed tube with Hydrochloric Acid. It differs in composition from Morphine Hydrochloride, in being minus the elements of one molecule of water.

Solubility.—1 in 50 of Water and Spirit; insoluble in Ether and Chloroform.

Dose.—$\frac{1}{32}$ to $\frac{1}{16}$ gr. as an expectorant; $\frac{1}{10}$ to $\frac{1}{4}$ gr. as an emetic.

Incompatibles.—Akalies and their Carbonates; Salts of Iron.

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† See footnote, page 70.

Preparation :—

Injectio Apomorphinæ Hypodermica.—Apomorphine Hydrochloride, Diluted Hydrochloric Acid and Water. (1 in 100.)

Dose.—5 to 10 minims ($=\frac{1}{22}$ — $\frac{1}{11}$ grain.)

Note.—Should be recently prepared.

***Cocæ Folia.**—The dried leaves of *Erythroxylum Coca.*

Characters.—1 or 3 inches in length, margin entire, apex blunt, surfaces quite smooth; prominent midrib, with a slightly visible curved line on each side of it extending from apex to base.

Composition.—Active principle, the alkaloid Cocaine (*vide infra*); Ecgonine (an alkaloid).

Dose.—$\frac{1}{2}$ to 1 drachm.

Preparations :—

(1) **Cocaina** (*vide infra.*)

(2) **Extractum Cocæ Liquidum.**—A tincture of the leaves is prepared with 60 per cent Alcohol, and evaporated, till 1 fluid ounce = 1 ounce of leaves.

Dose.—$\frac{1}{2}$ to 1 drachm.

Cocaina.—An alkaloid obtained from an acidulated alcoholic extract of Coca Leaves, by treating it with Ether and Sodium Carbonate; evaporating the Ether, purifying the product.

Solubility.—1 in 1300 of Water; 1 in 10 of Rectified Spirit; 1 in 4 of Oleic Acid; 2 in 1 of Chloroform; 1 in 4 of Ether. Insoluble in Glycerine.

Dose.—$\frac{1}{5}$ to $\frac{1}{2}$ grain, in pill.

Preparation :—

Unguentum Cocainæ.—Cocaine, Oleic Acid, and Lard. (1 in 25.)

Cocainæ Hydrochloridum.—Obtained by treating Cocaine with Hydrochloric Acid.

Solubility.—2 in 1 of Water; 1 in $2\frac{1}{2}$ of Spirit and Glycerine. Insoluble in Ether, and Oleic Acid.

Dose.—$\frac{1}{5}$ to $\frac{1}{2}$ grain, in solution.

Incompatibles.—Alkaline Carbonates; Salts of Lead and Silver.

Preparations:—

(1) **Lamellæ Cocainæ.**—Discs of Gelatine with Glycerine weighing $\frac{1}{30}$ grain, and each containing $\frac{1}{50}$ gr. of Cocaine Hydrochloride.

(2) **Injectio Cocainæ Hypodermica.**—Cocaine Hydrochloride, Salicylic Acid, and Water. (1 in 10.) *Dose.*—2 to 5 minims, by subcutaneous injection.

(3) **Trochiscus Krameriæ et Cocainæ.**—Extract of Krameria, Cocaine Hydrochloride, and Fruit Lozenge Basis.

($\frac{1}{20}$ grain of Cocaine Hydrochloride in each Lozenge.)

***Jaborandi Folia.**—The dried leaflets of *Pilocarpus Jaborandi.*

Characters.—From $2\frac{1}{2}$ to 4 inches in length; very short stalks; unequal at base; margins entire, apex emarginate (notched); midrib prominent; when held to the light the leaf is seen to be marked all over with pellucid dots (oil glands).

Composition.—Active principle the alkaloid Pilocarpine (*vide infra*); three other alkaloids, Jaborine, Pilocarpidine and Jaboridine.

Dose.—5 to 15 grains.

Preparations:—

(1) **Pilocarpinæ Nitras.**—Obtained by treating Extract of Jaborandi with Chloroform and an Alkali,

evaporating the Chloroform, neutralizing the residue with Nitric Acid, and purifying.

Dose.—$\frac{1}{20}$ to $\frac{1}{2}$ grain, in pill, or dissolved in water.

(2) Extractum Jaborandi Liquidum.—Obtained by evaporating a tincture of the leaves, till 1 fluid ounce = 1 ounce of leaves.

Dose.—5 to 15 minims.

(3) Tinctura Jaborandi.—1 of the leaves in 5 of 45 per cent. Alcohol; percolate.

Dose.—$\frac{1}{2}$ to 1 drachm.

***Quassiæ Lignum.**—The wood of *Picræna excelsa.*

Characters.—Pale yellowish-white, chips, raspings, or shavings, without odour, but with an intensely bitter taste.

Composition.—Active principle a neutral bitter principle Quassin. Contains no Tannic Acid, and its preparations are, therefore, compatible with Salts of Iron.

Dose.—Given only in its preparations.

Preparations:—

(1) Infusum Quassiæ.—Quassia chips, and *cold* Water.

Dose.—$\frac{1}{2}$ to 1 ounce.

(2) Liquor Quassiæ Concentratus.—Quassia chips and 20 per cent. Alcohol; percolate.

Dose.—$\frac{1}{2}$ to 1 drachm.

(3) Tinctura Quassiæ.—Quassia chips, and 45 per cent. Alcohol; macerate.

Dose.—$\frac{1}{2}$ to 1 drachm.

***Calumbæ Radix.**—The root of *Jateorhiza Columba*, cut transversely and dried.

Characters.—Irregular, somewhat circular flattish pieces, about 1 or 2 inches in diameter; greyish, or greenish yellow in colour, easily broken and reduced to powder; very slight musty odour, and very bitter taste.

Composition.—An alkaloid Berberine; a neutral principle Calumbin; a large quantity of Starch. It contains no Tannic Acid, and may be given with Iron Salts.

Dose.—5 to 20 grains, in powder.

Preparations:—

(1) Infusum Calumbæ.—Calumba Root and *cold* Water.

Dose.—½ to 1 ounce.

Note.—Cold water does not extract the starch.

(2) Liquor Calumbæ Concentratus.—Calumba Root, Water and Rectified Spirit.

Dose.—½ to 1 drachm.

(3) Tinctura Calumbæ.—Calumba Root and 60 per cent. Alcohol; macerate.

Dose.—½ to 1 drachm.

***Gentianæ Radix.**—The dried root of *Gentiana lutea.*

Characters.—More or less cylindrical pieces, often sliced longitudinally, ½ to 1 inch thick; yellowish-brown externally, lighter internally; wrinkled, tough and brittle when dry; odour peculiar; taste sweetish, then very bitter.

Composition.—Active principle a glucoside, Gentiopicrin: contains Gentio-tannic Acid, and is not compatible with Iron Salts.

Dose.—Given only in preparations.

Preparations:—

(1) **Extractum Gentianæ.**—By evaporating a decoction of the root.
Dose.—2 to 8 grains.

(2) **Infusum Gentianæ Compositum.**—Gentian Root, Orange and Lemon Peels, and boiling Water.
Dose.—$\frac{1}{2}$ to 1 ounce.

(3) **Tinctura Gentianæ Composita.**—Gentian Root, Orange Peel, Cardamom Seeds, and 45 per cent. Alcohol; macerate.
Dose.—$\frac{1}{2}$ to 1 drachm.

***Physostigmatis Semen** (Calabar Bean).—The dried seeds of *Physostigma venenosum.*

Characters.—Kidney shaped beans; deep chocolate colour, roughish; a broad furrow along convex side; about 1 inch long, $\frac{3}{4}$ inch broad, and $\frac{1}{2}$ inch thick.

Composition.—The only important constituent is the alkaloid Physostigmine, commonly called Eserine (*vide infra*).

Dose.—1 to 4 grains, in powder.

Preparation:—

Extractum Physostigmatis.—By evaporating a tincture of the beans, and mixing the resulting soft extract with three times its weight of Milk Sugar.
Dose.—$\frac{1}{4}$ to 1 grain.

Physostigminæ Sulphas (Eserine Sulphate).—The Sulphate of an alkaloid obtained by dissolving the Extract of Calabar Bean in water, treating it with Sodium Bicarbonate and Ether, and evaporating the ethereal solution.

Dose.—$\frac{1}{60}$ to $\frac{1}{20}$ grain, rarely given internally.

Preparation.—**Lamellæ Physostigminæ.**—Discs of Gelatine with Glycerine, each containing $\frac{1}{1000}$ gr. of Physostigmine Sulphate.

Caffeina.—An alkaloid obtained from Tea (*Camellia Thea*), or Coffee (*Coffea Arabica*), by evaporating aqueous infusions from which astringent and colouring matters have been removed.

Solubility.—1 in 68 of Water; 1 in 40 of Rectified Spirit.

Dose.—1 to 5 grains, in solution, or in pill.

Preparations:—

(1) **Caffeinæ Citras.**—By dissolving Caffeine in an aqueous solution of Citric Acid, and evaporating.
Dose.—2 to 10 grains, in solution.

(2) **Caffeinæ Citras Effervescens.**—Caffeine Citrate, Tartaric and Citric Acids, Sodium Bicarbonate and Sugar (4 per cent. of Caffeine Citrate).
Dose.—1 to 2 drachms.

***Conii Fructus** (Hemlock Fruit).—The fully developed fruit of *Conium maculatum* (Spotted Hemlock), gathered while still green, and dried.

Characters.—Seed-like fruits (resembling Caraways, but shorter), about $\frac{1}{8}$ inch long, shape ovoid, colour greenish-grey; each fruit shows five crenated ridges and smooth furrows. Powdered and rubbed with Caustic Potash they give out a strong mouse-like odour.

Composition.—A volatile liquid alkaloid Conine with characteristic mouse-like odour, and a less important alkaloid Conhydrine.

Dose.—Given only in preparation.

Preparation:—

Tinctura Conii.—Hemlock Fruit, and 70 per cent. Alcohol; percolate. (1 in 5.)
Dose.—$\frac{1}{2}$ to 1 drachm.

Conii Folia.—The *fresh* leaves and young branches of *Conium maculatum*, from British plants, when fruit begins to form.

Composition.—Same as Conii Fructus.

Dose.—2 to 8 grains, in powder.

Preparations :—

(1) **Succus Conii**.—Juice of fresh Hemlock Leaves preserved by addition of $\frac{1}{4}$th Rectified Spirit.
Dose.—1 to 2 drachms, or more.

(2) **Unguentum Conii**.—Hemlock Juice (evaporated to $\frac{1}{8}$th its volume at a temperature not exceeding 140° F.) and Hydrous Wool Fat.

*__Asafœtida.__—A gum-resin † obtained by incision from the living root of *Ferula fœtida*, and other species.

Characters.—Usually in irregular, yellowish-brown masses, with a strong onion-like odour.

Composition.—A volatile oil (chiefly Allyl Sulphide) to which the odour is due ; a resin and a gum.

Dose.—5 to 15 grains.

Preparations :—

(1) **Pilula Aloes et Asafœtidæ.** (*See Aloe Socotrina.*)

(2) **Pilula Galbani Composita**.—Asafœtida, Galbanum, Myrrh, and Syrup of Glucose.
Dose.—4 to 8 grains.

(3) **Spiritus Ammoniæ Fœtidus**.—Asafœtida, and Rectified Spirit macerated together, distilled, and Strong Solution of Ammonia added to the distillate.
Dose.—20 to 40 minims for repeated administra-

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† Gum-resins are vegetable exudations consisting of both a gum and a resin ; when rubbed with water they form milky liquids (emulsions).

tion; 60 to 90 minims for single administration.

(4) **Tinctura Asafœtidæ.**—Asafœtida, and 70 per cent. Alcohol; macerate.

Dose.—½ to 1 drachm, suspended with Mucilage.

***Ammoniacum.**—A gum-resin exuded from the flowering and fruiting stem of *Dorema ammoniacum*, and probably other species.

Characters.—In tears or masses, pale yellow when fresh, becoming brown; odour faint and peculiar.

Composition.—A volatile oil, gum, and resin.

Dose.—5 to 15 grains.

Preparations:—

(1) **Emplastrum Ammoniaci cum Hydrargyro.** (*See Hydrargyrum.*)

(2) **Mistura Ammoniaci.**—Ammoniacum rubbed with Water to form an emulsion, to which Syrup of Tolu is added.

Dose.—½ to 1 ounce.

(3) **Pilula Scillæ Composita.** (*See Scilla.*)

(4) **Pilula Ipecacuanhæ cum Scilla.** (*See Opium.*)

***Myrrha** (Myrrh).—A gum-resin exuded from the stem of *Balsamodendron Myrrha*, and probably other species.

Characters.—Irregular-shaped masses varying much in size; reddish-brown, or reddish-yellow in colour and dry externally. Brittle, fractured surface translucent, brown, oily looking; odour agreeable and aromatic.

Composition.—A volatile oil (*myrrhol*); a resin (*myr-*

rhic acid); and a gum. Forms an emulsion when rubbed with water.

Dose.—10 to 30 grains.

Preparations :—

(1) **Tinctura Myrrhæ.**—Myrrh, and Rectified Spirit; macerate.

Dose.—½ to 1 drachm.

(2) **Pilula Aloes et Myrrhæ.** (*See Aloe Socotrina.*)

(3) It also forms an ingredient in **Decoctum Aloes Compositum, Mistura Ferri Composita, Pilula Galbani Composita,** and **Pilula Rhei Composita**; all described elsewhere.

*__Guaiaci Resina__ (Guaiacum Resin).—A resin obtained from the stem of *Guaiacum officinale*, or of *Guaiacum sanctum*, by natural exudation, incision, or by heat.

Characters.—Usually in large masses (more rarely in tears), containing fragments of wood, &c.; greenish-brown externally, and commonly covered with a green powder; odour somewhat balsamic. On dry distillation it yields *Guaiacol* similar to that obtained from Creosote.

Composition.—Three resinous bodies (Guaiaconic, Guaiac, and Guaiaretic Acids).

Dose.—5 to 15 grains, in suspension.

Incompatibles.—Mineral Acids; Spirit of Nitrous Ether.

Preparations :—

(1) **Mistura Guaiaci.**—Guaiacum Resin, Tragacanth, Sugar, and Cinnamon Water.

Dose.—½ to 1 ounce.

(2) **Tinctura Guaiaci Ammoniata.**—Guaiacum Resin,

Rectified Spirit, Oils of Nutmeg and Lemon, and Strong Solution of Ammonia ; macerate.

Dose.—½ to 1 drachm, with Mucilage and Water.

(3) **Pilula Hydrargyri Subchloridi** (*vide Hydrargyrum Subchloridum*).

(4) **Trochiscus Guaiaci Resinæ.**—Guaiacum Resin and Fruit Lozenge Basis.

Dose.—1 to 3 Lozenges.

Cinchonæ Cortex (Cinchona, or Peruvian Bark).—The dried bark of several species of *Cinchona* (*C. Calisaya*, *C. officinalis*, *C. lancifolia*, *C. succirubra*, *&c.*).

Composition.—Vide Cinchonæ Rubræ Cortex.

Note.—These barks are used in the preparation of the Salts of Quinine, Cinchonine and Cinchonidine ; all other preparations of Cinchona are made from Cinchonæ Rubræ Cortex.

***Cinchonæ Rubræ Cortex** (Red Cinchona Bark).—The dried bark of the stem and branches of cultivated plants of *Cinchona succirubra*, containing between 5 and 6 per cent. of total alkaloids, of which not less than half should consist of Quinine and Cinchonidine.

Characters.—In quills or more or less incurved pieces, coated with the periderm ; varying from a few inches to a foot in length ; one-tenth to a quarter of an inch thick ; outer surface brownish or reddish-brown, marked with longitudinal furrows and ridges, transverse cracks, annular fissures and warts ; inner surface brick-red, or deep reddish-brown, coarsely striated ; taste bitter and somewhat stringent.

Composition.—Four alkaloids, Quinine, Cinchonine, Quinidine and Cinchonidine ; Quinic, Quinovic and Cincho-tannic Acids ; red colouring matter and a volatile oil.

Incompatibles.—Alkalies and their Carbonates; Metallic Salts.

Dose.—15 to 60 grains, in powder.

Preparations:—

(1) **Extractum Cinchonæ Liquidum.**—Red Cinchona Bark, Hydrochloric Acid, Glycerine, Rectified Spirit and Water; the Bark is macerated and percolated with a mixture of the Acid, Glycerine and Water; the liquid is then evaporated to a small bulk, and its strength in total alkaloids ascertained; finally it is diluted, or further evaporated, till the finished product after the addition of 12½ per cent. of Spirit contains 5 per cent of total alkaloids.

Dose.—5 to 15 minims.

Note.—It is a "standardized" preparation. 1 fluid ounce = 1 ounce of bark.

(2) **Infusum Cinchonæ Acidum.**—Red Cinchona Bark, Aromatic Sulphuric Acid, and Boiling Water.

Dose.—½ to 1 ounce.

(3) **Tinctura Cinchonæ.**—Red Cinchona Bark, and 70 per cent. Alcohol; percolate.

Dose.—½ to 1 drachm.

Note.—Standardized to contain 1 per cent. of total alkaloids.

(4) **Tinctura Cinchonæ Composita.**—Tincture of Cinchona, Bitter Orange Peel, Serpentary Root, Saffron, Cochineal, and 70 per cent. Alcohol; macerate.

Dose.—½ to 1 drachm.

Note.—Contains ½ per cent. of total alkaloids.

***Quininæ Sulphas.**—The sulphate of an alkaloid prepared from various kinds of Cinchona and Remijia

Barks by extraction with Spirit after the addition of Lime, or by the action of alkali on an acidulated aqueous infusion, with subsequent neutralization of the alkaloid by Sulphuric Acid, and purification of the resulting salt.

Characters.—Filiform silky snow-white crystals, *odourless*, but with an intensely *bitter* taste. (Compare with *Acidum Benzoicum*, and *Acidum Salicylicum.*)

Solubility.—1 in 800 of Water; freely in Water acidulated with a mineral acid; 1 in 65 of Rectified Spirit.

Incompatibles.—Alkalies and their Carbonates and Citrates; preparations containing Tannic Acid.

Dose.—1 to 10 grains.

Preparations:—

(1) **Ferri et Quininæ Citras.** (See page 52.)

(2) **Tinctura Quininæ Ammoniata.**—Sulphate of Quinine dissolved in 60 per cent. Alcohol and Solution of Ammonia. (1 gr. in 55 minims.)

Dose.—$\frac{1}{2}$ to 1 drachm, diluted at the time of taking.

(3) **Pilula Quininæ Sulphatis.**—Quinine Sulphate, Tartaric Acid, Tragacanth and Glycerine. (5 of Quinine Sulphate in 6.)

Dose.—2 to 8 grains.

(4) **Syrupus Ferri Phosphatis cum Quinina et Strychnina.** (*See Ferri Phosphas.*)

Quininæ Hydrochloridum.—Obtained from the same sources and by the same process as Quininæ Sulphas, the separated alkaloid being neutralized by Hydrochloric Acid.

Solubility.—1 in 37 of Water; 1 in 1 of Rectified Spirit.

Dose.
Incompatibles. } Same as Quininæ Sulphas.
Preparations :—

(1) Tinctura Quininæ.—Hydrochloride of Quinine and Tincture of Orange Peel. (1 gr. in 55 minims.)
Dose.—½ to 1 drachm.

(2) Vinum Quininæ.—Hydrochloride of Quinine and Orange Wine. (1 grain in each ounce.)
Dose.—½ to 1 ounce.

(3) Quininæ Hydrochloridum Acidum.—An acid salt containing double the quantity of Hydrochloric Acid contained in Quinine Hydrochloride.
Dose.—1 to 10 grains in solution.

Salicinum.—A crystalline glucoside obtained from the bark of *Salix alba* and other species of Salix, and from the bark of various species of Populus, by treating them with hot water, removing Tannic Acid and colouring matter from the decoction, evaporating, purifying and crystallizing.

Solubility.—1 in 28 of Water; 1 in 60 of Spirit.

Dose.—5 to 20 grains, in cachets, or in pills with Glucose.

Preparations.—None.

***Ipecacuanhæ Radix.**—The dried root of *Psychotria Ipecacuanha.*

Characters.—In more or less twisted pieces, 2 to 4 inches long, and about the size of small writing-quill. It consists of a central whitish woody axis, and a thick cortical portion, which is brownish, greyish-brown or reddish-brown, irregularly annulated. Taste acrid and bitter; odour slight and peculiar.

Composition.—The alkaloid Emetine (the active principle), contained almost entirely in the bark.

Dose.—As an expectorant, ¼ to 2 grains; as an emetic, 15 to 30 grains.

Preparations:—

(1) **Pulvis Ipecacuanhæ Compositus.** (*See Opium.*)
(1 of Ipecacuanha in 10.)

(2) **Pilula Ipecacuanhæ cum Scilla.** (*See Opium.*)

(3) **Trochiscus Ipecacuanhæ.**—Ipecacuanha, and Fruit Lozenge Basis.
(¼ gr. Ipecacuanha in each lozenge.)

Dose.—1 to 3 Lozenges.

(4) **Trochiscus Ipecacuanhæ et Morphinæ.** (*See Morphinæ Hydrochloridum.*)
($\frac{1}{12}$ gr. Ipecacuanha in each lozenge.)

(5) **Extractum Ipecacuanhæ Liquidum.**—Prepared by percolating the root with Rectified Spirit, then mixing Slaked Lime with the root and again percolating with Spirit; concentrating and standardizing the liquid till it contains from 2 to 2¼ per cent. of alkaloids.

Dose.—As an expectorant ½ to 2 minims; as an emetic 15 to 20 minims.

(6) **Acetum Ipecacuanhæ.**—Liquid Extract of Ipecacuanha, Rectified Spirit and Diluted Acetic Acid. (1 of Liquid Extract in 20.)

Dose.—10 to 30 minims.

Note.—Not to be given with Carbonates.

(7) **Vinum Ipecacuanhæ.**—Liquid Extract of Ipecacuanha, and Sherry.
(1 of Liquid Extract in 20.)

Dose.—As an expectorant, 10 to 30 minims; as an emetic, 4 to 6 drachms.

*__Senegæ Radix.__—The dried root of *Polygala Senega.*

Characters.—One-fifth to one-third of an inch thick; more or less twisted, curved or branched; enlarged at the upper end into an irregular knotty tuberosity, which bears the remains of numerous small stems; colour yellowish- or brownish-grey; odour peculiar.

Composition.—The active principle is the glucoside Saponin, which is allied to Digitonin, one of the principles in Digitalis.

Dose.—Given only in preparations.

Preparations:—

(1) **Infusum Senegæ.**—Senega Root and Boiling Water.

Dose.—½ to 1 ounce.

(2) **Tinctura Senegæ.**—Senega Root and Proof Spirit; percolate.

Dose.—½ to 1 drachm.

(3) **Liquor Senegæ Concentratus.**—Senega Root and Diluted Alcohol (about 28 per cent.); percolate.

Dose.—½ to 1 drachm.

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*__Nux Vomica.__—The seeds of *Strychnos Nux-vomica.*

Characters.—Roundish flat beans, about an inch in diameter, and ¼ inch thick. Externally, ash-grey or yellowish-grey in colour, glistening, and soft to the touch, from being covered with short satiny hairs. Very tough and horny; no odour, but extremely bitter taste.

Composition.—Two alkaloids, Strychnine and Brucine, combined with Strychnic Acid.

Dose.—1 to 4 grains, in powder.

Preparations:—

(1) **Strychnina.** (*Vide infra.*)

(2) **Extractum Nucis Vomicæ Liquidum.**—A "standardized" liquid extract, prepared (1) by macerating and percolating powdered Nux Vomica Seeds with 70 per cent. Alcohol; (2) ascertaining the proportion of Strychnine in the resulting liquid; (3) standardizing so that the finished product contains 1.5 per cent. of Strychnine.

Dose.—1 to 3 minims.

(3) **Tinctura Nucis Vomicæ.**—Liquid Extract of Nux Vomica, Rectified Spirit, and Water.

(1 of Liquid Extract in 6.)

Dose.—5 to 15 minims.

N.B.—*This tincture contains* .25 *per cent. of Strychnine.*

(4) **Extractum Nucis Vomicæ.**—10 fluid ounces of Liquid Extract of Nux Vomica are evaporated, and Milk Sugar added to produce 3 ounces of firm extract containing 5 *per cent.* of Strychnine.

Dose.—$\frac{1}{4}$ to 1 grain.

***Strychnina.**—An alkaloid obtained from Nux Vomica by following process:—(1) Prepare a strong tincture of the seeds with Spirit and Water; (2) distil off the Spirit and to the remaining aqueous liquid add Lead Acetate, and filter; (3) evaporate the filtrate, add Ammonia, collect the precipitate; (4) purify by washing with boiling Spirit, evaporating the spirituous solution to a small bulk, and carefully separating the crystals of Strychnine from the mother liquor containing the Brucine.

Characters.—In right square octahedrons or prisms, colourless, and odourless. Pure Sulphuric Acid forms with it a colourless solution, which becomes intensely violet on the addition of Potassium Bichromate.

Solubility.—1 in 6000 of Water; more readily soluble in acidulated Water; 1 in 160 of Rectified Spirit.

Dose.—$\frac{1}{60}$ to $\frac{1}{15}$ grain.

Preparation:—

Syrupus Ferri Phosphatis cum Quinina et Strychnina. (*See Ferri Phosphas.*)

($\frac{1}{32}$ grain in each drachm.)

Strychninæ Hydrochloridum.—Prepared by treating Strychnine with Hydrochloric Acid.

Solubility.—1 in 35 of Water; 1 in 60 of Rectified Spirit.

Dose.—$\frac{1}{60}$ to $\frac{1}{15}$ grain.

Preparation:—

Liquor Strychninæ Hydrochloridi. — Strychnine Hydrochloride, Rectified Spirit, and Water.

(1 in 100.)

Dose.—2 to 8 minims.

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*__Belladonnæ Radix.__—The dried root of *Atropa Belladonna* (the Deadly Night-shade), collected in autumn.

Characters.—In rough irregular long pieces, $\frac{1}{2}$ to 2 inches thick; dirty-grey or brownish externally, light brown internally; breaks easily, and the broken ends show a dark line near the circumference.

Composition.—The two alkaloids. Atropine and Hyoscyamine, in combination with Malic Acid.

Incompatibles.—Caustic Alkalies.

Dose.—Given only in preparations.

Preparations :—

(1) **Atropina.** (*Vide infra.*)

(2) **Extractum Belladonnæ Liquidum.**—Prepared by percolating Belladonna Root with a mixture of 7 volumes of Rectified Spirit and 1 volume of Water, and standardizing the resulting liquid.

(Contains .75 per cent of Alkaloids.)

Dose.—Given in the diluted form of Tinctura Belladonnæ. (*Vide infra.*)

Note.—All the other Preparations of Belladonna Root are made from the Liquid Extract, except Suppositoria Belladonnæ.

(3) **Tinctura Belladonnæ.**—Liquid Extract of Belladonna and 60 per cent. Alcohol.

(1 of Liquid Extract in 15 = .05 per cent. of Alkaloids.)

Dose.—5 to 15 minims.

(4) **Linimentum Belladonnæ.**—Liquid Extract of Belladonna, Camphor, Rectified Spirit, and Water. (1 of Liquid Extract in 2

(5) **Emplastrum Belladonnæ.**—Liquid Extract of Belladonna evaporated to ¼th and Resin Plaster.

(Contains .5 per cent. of Alkaloids.)

(6) **Unguentum Belladonnæ.**—Liquid Extract of Belladonna evaporated to ¼th, and mixed with Benzoated Lard.

(Contains .6 per cent. of Alkaloids.)

(7) **Extractum Belladonnæ Alcoholicum.**—Liquid Extract of Belladonna evaporated to the consistence of a moderately firm extract, and mixed with sufficient Milk Sugar to make the weight of the finished product ¾ths of that of the Liquid Extract used.

(Contains 1. per cent. of Alkaloids.)

Dose.—¼ to 1 grain.

(8) **Suppositoria Belladonnæ.** — Alcoholic Extract of Belladonna, and Coca Butter.

(1½ grains of Alcoholic Extract in each Suppository = $\frac{1}{60}$ grain of Alkaloids.)

Belladonnæ Folia.—The fresh leaves and branches of *Atropa Belladonna* (Deadly Night-shade), collected from British plants when in flower.

Composition. } Same as Belladonnæ Radix.
Incompatibles. }

Dose.—Given only in preparations.

Preparations:—

(1) **Extractum Belladonnæ Viride.** — A green extract. For process see page 4.

Dose.—¼ to 1 grain.

Note.—Good extract contains about 1 per cent. of Alkaloids.

(2) **Succus Belladonnæ.**—The juice from the fresh leaves and young branches to which ⅓ of its volume of Rectified Spirit has been added.

Dose.—5 to 15 minims.

Note.—Good juice contains about .05 per cent. of Alkaloids.

Atropina.—An alkaloid obtained from Belladonna Root or Leaves. (1) Prepare a strong tincture; (2) precipitate colouring matter with Lime, filter, and slightly acidify with Sulphuric Acid; (3) distil off the Spirit, and add aqueous solution of Potassium Carbonate, so as to nearly but not quite neutralize the acid; (4) filter, render alkaline with more Potassium Carbonate, shake up with Chloroform; (5) separate and evaporate the Chloroform solution, and purify the resulting alkaloid.

Note.—Atropine is closely allied to Hyoscyamine and Hyoscine (from Hyoscyamus), and Daturine (from Stramonium).

Solubility.—1 in 500 of Water; 1 in 3 of Rectified Spirit; 1 in 40 of Olive Oil; 1 in 15 of Oleic Acid.

Incompatibles.—Caustic Alkalies render it inert.

Dose.—$\frac{1}{200}$ to $\frac{1}{100}$ grain.

Preparations:—

(1) Atropinæ Sulphas. (*Vide infra.*)

(2) Unguentum Atropinæ.—Atropine dissolved in Oleic Acid and mixed with Lard. (1 in 50.)

Atropinæ Sulphas.—By neutralizing Atropine with diluted Sulphuric Acid, and evaporating the solution to dryness at a temperature not exceeding 100° F.

Solubility.—10 in 4 of Water; 1 in 4 of Rectified Spirit. Insoluble in Oil, and Oleic Acid.

Incompatibles.—Caustic Alkalies.

Dose.—$\frac{1}{200}$ to $\frac{1}{100}$ grain.

Preparations:—

(1) Liquor Atropinæ Sulphatis.—Atropine Sulphate, Salicylic Acid and Water. (1 in 100.)
Dose.—$\frac{1}{2}$ to 1 minim.

(2) Lamellæ Atropinæ.—Discs of Gelatine with some Glycerine, each containing $\frac{1}{5000}$ grain of Atropine Sulphate.

Homatropinæ Hydrobromidum.—(1) Atropine is decomposed by Baryta Water into Tropine and Tropic Acid; (2) Tropine is combined with Mandelic Acid; (3) the action of Hydrochloric Acid on the resulting Mandelate of Tropine gives Homatropine; and (4) the Homatropine is neutralized wiih Hydrobromic Acid.

Solubility.—1 in 6 of Water; 1 in 18 of Rectified Spirit.

Dose.—$\frac{1}{80}$ to $\frac{1}{20}$ grain.

Preparation:—

Lamellæ Homatropinæ.—Discs of Gelatine with some Glycerine, each containing $\frac{1}{100}$ grain of Homatropine Hydrobromide.

Hyoscyami Folia (Henbane Leaves).—The fresh leaves and flowers, and branches of *Hyoscyamus niger;* also the dried leaves and flowering tops, collected from British biennial plants, when about two-thirds of the flowers are expanded.

Composition.—The two alkaloids Hyoscyamine and Hyoscine, in combination with Malic Acid.

Incompatibles.—Caustic Alkalies.

Dose.—Given only in preparations.

Preparations:—

(1) **Extractum Hyoscyami Viride.**—A green extract. For process see page 4.
Dose.—2 to 8 grains.

(2) **Succus Hyoscyami.**—The juice from the fresh leaves and branches, to which $\frac{1}{3}$ of its volume of Rectified Spirit has been added.
Dose.—½ to 1 drachm.

(3) **Tinctura Hyoscyami.**—Dried Henbane Leaves and 45 per cent. Alcohol; percolate.
Dose.—30 to 60 minims or more.

(4) **Hyoscinæ Hydrobromidum** and **Hyoscyaminæ Sulphas.** (*Vide infra.*)

Hyoscinæ Hydrobromidum.—The Hydrobromide of an alkaloid contained in *Hyoscyamus niger* and possibly other solanaceous plants.

Solubility.—1 in 4 of Water; 1 in 14 of Rectified Spirit.

Dose.—$\frac{1}{200}$ to $\frac{1}{100}$ grain.

Preparations.—None.

Hyoscyaminæ Sulphas.—The Sulphate of an alkaloid contained in *Hyoscyamus niger* and possibly other solanaceous plants.

Solubility.—2 in 1 of Water; 1 in 4½ of Rectified Spirit.

Dose.—$\frac{1}{200}$ to $\frac{1}{100}$ grain.

Preparations.—None.

***Stramonii Semina.**—The dried ripe seeds of *Datura Stramonium* (the Thorn-apple).

Characters.—About $\frac{1}{8}$ inch long, kidney shaped, finely pitted, wrinkled; brownish-black in colour.

Composition.—Active principles, the two alkaloids Atropine and Hyoscyamine. They also contain a considerable quantity of a fixed oil.

Note.—The mixture of Atropine and Hyoscyamine obtained from Stramonium is generally called "Daturine."

Incompatibles.—Caustic Alkalies; Mineral Acids and Salts.

Dose.—Given only in preparations.

Preparations:—

Extractum Stramonii.—Stramonium Seeds and 70 per cent. Alcohol. Percolate with the Spirit, and evaporate the resulting tincture.

Dose.—$\frac{1}{4}$ to 1 grain.

Stramonii Folia.—The dried leaves of *Datura Stramonium* (Thorn-apple), from plants in flower.

Composition. }
Incompatibles. } Same as Stramonii Semina.

Dose.—Given only in preparations.

Preparation:—

Tinctura Stramonii.—Stramonium Leaves and 45 per cent. Alcohol: percolate. (1 in 5.)
Dose.—5 to 15 minims.

***Cannabis Indica** (Indian Hemp).—The dried flowering or fruiting tops of the female plants of *Cannabis sativa*, grown in India, from which the resin has not been removed.

Characters.—In more or less aggregated masses, about 2 inches long, consisting of the tops of one or more branches bearing remains of flowers, leaves and fruits, pressed together by adhesive resinous matter; or it is in straight stiff woody stems, surrounded by branched flower-stalks. It is dusky-green in colour, tasteless, with a faint peculiar odour.

Composition.—An amorphous resin, called Cannabin, and a volatile oil.

Dose.—Given only in preparations.

Preparations:—

(1) Extractum Cannabis Indicæ.—Obtained by evaporating a tincture prepared with Rectified Spirit.
Dose.—$\frac{1}{4}$ to 1 grain, in pill, with powdered Liquorice.

(2) Tinctura Cannabis Indicæ.—Extract of Indian Hemp and Rectified Spirit. (1 of Extract in 20.)
Dose.—5 to 15 minims, in Mucilage.

***Digitalis Folia.**—The dried leaves of second year's British plants of *Digitalis purpurea* (Foxglove), collected when the plants are commencing to flower.

Characters.—4 to 12 inches long, 2 to 5 inches broad; ovate, or ovate-lanceolate; crenate margin; dull green, slightly hairy above, paler green and more hairy on under surface; the veins are very distinct on the under side. Taste bitter, and unpleasant; odour tea-like.

Composition.—A number of glucosides, viz.:—Digitalin, Digitalein, Digitoxin, Digitin, and Digitonin.

Incompatibles.—Astringent Salts of Iron, Lead Acetate, and Cinchona Preparations.

Dose.—$\frac{1}{2}$ to 2 grains, in powder or pill.

Preparations:—

(1) Infusum Digitalis.—Digitalis Leaves, and boiling Water. (1 in 146.)

Dose—2 to 4 drachms.

Note.—Compare with doses of other Infusions.

(2) Tinctura Digitalis.—Digitalis Leaves, and 60 per cent. Alcohol; percolate. (1 in 8.)

Dose.—5 to 15 minims.

***Strophanthi Semina.**—The mature ripe seeds of *Strophanthus Kombé.*

Characters.—Greenish-fawn coloured seeds with a silky hairy covering; about $\frac{5}{8}$ inch long, and $\frac{1}{8}$ inch broad; odour characteristic, taste bitter. The apex has a compressed hairy appendage, resembling that on dandelion seeds, but this has usually been removed.

Composition.—The active principle is the glucoside Strophanthin. They contain a quantity of fixed oil.

Dose.—Given only as Tincture, or Extract.

Preparations:—

(1) Tinctura Strophanthi.—Strophanthus Seeds and 70 per cent. Alcohol; percolate. (1 in 40.)

Dose.—5 to 15 minims in Chloroform Water. With plain water it rapidly decomposes.

(2) Extractum Strophanthi.—Strophanthus Seeds, dried and powdered, are percolated with Purified Ether, till free from oil. A tincture (1 in 10) is then prepared from them by percolating with Rectified Spirit, which is evaporated till it begins to thicken, and sufficient Milk Sugar is added to bring up the weight of the finished product to twice that of the Strophanthus Seeds employed. (2 of Extract = 1 of Seeds.)

Dose.—¼ to 1 grain, in pill.

Oleum Ricini (Castor Oil).—A fixed oil expressed from the seeds of *Ricinus communis.*

Solubility.—Mixes in all proportions with Absolute Alcohol, Ether, Oil of Turpentine, and Glacial Acetic Acid; 1 in 3½ of Rectified Spirit.

Composition.—Chiefly consists of Ricin-oleic Acid, in combination with Glyceryl.

Dose.—1 to 8 drachms.

Preparation:—

Mistura Olei Ricini.—Castor Oil, Mucilage of Acacia, Cinnamon Water, and Orange Flower Water. (3 of Castor Oil in 8.)

Dose.—1 to 2 ounces.

Note.—Castor Oil is also an ingredient in Collodium Flexile, Linimentum Sinapis, and Pilula Hydrargyri Subchloridi Composita.

Oleum Crotonis (Croton Oil).—A fixed oil obtained by expression from the seeds of *Croton Tiglium.*

Composition.—The active principle is Crotonic Acid.

Dose.—½ to 1 minim, mixed with butter, or formed into a pill with soap.

Preparation :—

Linimentum Crotonis.—Croton Oil, Oil of Cajuput, and Rectified Spirit. (1 of Croton Oil in 8.)

***Aloe Barbadensis** (Barbadoes Aloes).—The dried juice from the leaves of *Aloe vera*, *Aloe chinensis*, and probably other species.

Characters.—Colour varying from deep reddish-brown to dark brown; brittle, fractured surface usually dull; the masses are opaque, but thin films are translucent; odour strong and disagreeable; taste bitter and nauseous.

Composition.—The active principle is a neutral crystalline body, Aloin. (*Vide infra.*)

Dose.—2 to 5 grains, in pill.

Preparations :—

(1) **Aloinum.** (*Vide infra.*)

(2) **Decoctum Aloes Compositum.**—Extract of Barbadoes Aloes, Myrrh, Saffron, Potassium Carbonate, Extract of Liquorice, Compound Tincture of Cardamoms, and Water.

Dose.—½ to 2 ounces.

(3) **Extractum Aloes Barbadensis.** — Barbadoes Aloes is dissolved in Water, and the clear solution evaporated to dryness.

Dose.—1 to 4 grains, in pill.

(4) **Pilula Aloes Barbadensis.**—Barbadoes Aloes, Hard Soap, Oil of Caraway and Confection of Roses.

Dose.—4 to 8 grains.

(5) **Pilula Aloes et Ferri.**—Barbadoes Aloes, Dried Sulphate of Iron, Compound Powder of Cinnamon, and Syrup of Glucose.

Dose.—4 to 8 grains.

(6) **Tinctura Aloes.**—Extract of Barbadoes Aloes, Liquid Extract of Liquorice, and 45 per cent. Alcohol; macerate.

Dose.—½ to 1 drachm for repeated administration; 1½ to 2 drachms for single administration.

***Aloe Socotrina** (Socotrine Aloes).—The dried juice from the leaves of *Aloe Perryi*, and probably other species.

Characters.—Colour very dark brown, almost black; brittle, fractured surface smooth and shiny; odour strong, but somewhat agreeable; taste bitter and nauseous.

Composition. } Same as Aloe Barbadensis.
Dose.— }

Preparations:—

(1) **Aloinum.** (*Vide infra.*)

(2) **Pilula Aloes Socotrinæ.**—Socotrine Aloes, Hard Soap, Oil of Nutmeg, and Confection of Roses.

Dose.—4 to 8 grains.

(3) **Pilula Aloes et Asafœtidæ.**—Socotrine Aloes, Asafœtida, Hard Soap, and Confection of Roses.

Dose.—4 to 8 grains.

(4) **Pilula Aloes et Myrrhæ.** — Socotrine Aloes, Myrrh, Syrup of Glucose.

Dose.—4 to 8 grains.

Note. Socotrine Aloes is also an ingredient in Pilula Rhei Composita, and Tinctura Benzoini Composita. Extract of Barbadoes Aloes is an ingredient in Extractum Colocynthidis Compositum, and Barbadoes Aloes of Pilula Colocynthidis Composita.

***Aloinum.**—A crystalline principle obtained from Aloes by solvents, and purified by re-crystallization. As obtained from the different varieties of Aloes, the products differ slightly.

Characters.—Usually in tufts of very small acicular crystals, yellow, without odour, but having the bitter taste of Aloes. (*Compare with Sulphur.*)

Solubility.—1 in 400 of Water; 1 in 18 of Rectified Spirit.

Dose.—½ to 2 grains, in pill.

Preparations.—None.

Cascara Sagrada.—The dried bark of *Rhamnus Purshianus.*

Composition.—A glucoside Purshianin, and various resinous bodies.

Dose.—Given only in preparations.

Preparations:—

(1) **Extractum Cascaræ Sagradæ.**—Obtained by evaporating to dryness an infusion of the bark.
Dose.—2 to 8 grains, in pill.

(2) **Extractum Cascaræ Sagradæ Liquidum.**—Obtained by evaporating an infusion of the bark, and adding Spirit.
Dose.—½ to 2 drachms.

(3) **Syrupus Cascaræ Aromaticus.**—Liquid Extract of Cascara Sagrada, Rectified Spirit, Tincture of Orange Cinnamon Water, and Syrup.
Dose.—½ to 2 drachms.

***Colocynthidis Pulpa** (Colocynth Pulp).—The dried peeled fruit, freed from seeds, of *Citrullus Colocynthis.*

Characters.—As imported, it is in more or less broken balls, whitish, about 2 inches in diameter, very light, spongy, tough, and consisting of the pulp with the seeds imbedded in it. The broken up pulp *freed from the seeds* is the "official" state of the drug; it is in light, spongy, whitish pieces, with a honey-combed appearance due to the spaces left by removal of the seeds. It has an intensely bitter taste, but no odour.

Composition.—The active principle is a glucoside, Colocynthin.

Dose.—2 to 8 grains, in pill.

Preparations:—

(1) **Extractum Colocynthidis Compositum.**—(1) Prepare a tincture of Colocynth Pulp in 60 per cent. Alcohol, and distil off the Spirit; (2) to the remaining liquid add, Extract of Barbadoes Aloes, Resin of Scammony and Curd Soap, and evaporate to the consistence of a firm extract; (3) add powdered Cardamom Seeds towards the end of the process.

Dose.—2 to 8 grains.

(2) **Pilula Colocynthidis Composita.**—Colocynth Pulp, Barbadoes Aloes, Resin of Scammony, Potassium Sulphate, Oil of Cloves, and Water.

Dose.—4 to 8 grains.

(3) **Pilula Colocynthidis et Hyoscyami.**—Compound Pill of Colocynth, and Extract of Henbane.

Dose.—4 to 8 grains.

•**Elaterium.**—A dried sediment from the juice of the Squirting Cucumber fruit (*Ecballium Elaterium*).

Characters.—In light friable flat or slightly curved opaque cakes, about $\frac{1}{10}$ inch thick; pale green, greyish-green, or yellowish-grey, according to age; odour tea-like, taste bitter and acrid.

Composition.—Its activity depends on the presence of a neutral principle, Elaterin, in quantity ranging from 20 to 25 per cent.

Dose.—$\frac{1}{10}$ to $\frac{1}{2}$ grain, in powder or in pill.

Preparation.—Elaterinum. (*Vide infra.*)

Elaterinum.—The active principle of Elaterium, obtained by exhausting it with Chloroform, adding Ether to the Chloroformic Solution, collecting the precipitate, washing it with Ether, and recrystallizing from solution in Chloroform.

Dose.—$\frac{1}{40}$ to $\frac{1}{10}$ grain.

Note.—It is about 4 times as active as Elaterium.

Preparation:—

Pulvis Elaterini Compositus.—Elaterin, and Sugar of Milk. (1 in 40.)

Dose.—1 to 4 grains.

***Jalapa** (Jalap). The dried tubercules of *Ipomœa Purga*.

Characters.—Irregularly oblong, ovoid, or napiform, hard, compact; varying much in size, the larger often cut into 2 or 4 pieces; externally dark brown, wrinkled; internally dirty yellowish or brownish; odour faint and peculiar; taste sweetish, acrid, and nauseous.

Composition.—The active principles are two resinous glucosides, Convolvulin and Jalapin. A mixture of these two bodies, consisting chiefly of the former, is commonly sold as "Jalapin."

Dose.—5 to 20 grains, in powder.

Preparations :—

(1) **Extractum Jalapæ.**—(1) A tincture of Jalap with Rectified Spirit is prepared, and evaporated to a soft extract; (2) an aqueous infusion of the residual Jalap (after the tincture) is then made, and evaporated to a soft extract; (3) the two extracts are mixed, and evaporation continued till the consistence of a firm extract is attained.

Dose.—2 to 8 grains.

(2) **Pulvis Jalapæ Compositus.**—Jalap, Ginger, and Potassium Acid Tartrate.

Dose.—20 to 60 grains.

(3) **Pulvis Scammonii Compositus.** — Scammony Resin, Jalap, and Ginger.

Dose.—10 to 20 grains.

(4) **Resina Jalapæ.**—A strong tincture of Jalap in Rectified Spirit is evaporated, after the addition of a small quantity of water, till the spirit is all removed; the resin is deposited.

Dose.—2 to 5 grains, in powder or pill.

(5) **Tinctura Jalapæ.**—Jalap, and 70 per cent. Alcohol; percolate. Standardized to contain 1.5 per cent. of Jalap Resin.

Dose.—½ to 1 drachm.

Podophylli Rhizoma.—The dried rhizome and rootlets of *Podophyllum peltatum.*

Composition.—A neutral principle, named Picropodophyllin, and Picropodophyllic Acid, are the active constituents.

Dose.—Given only as Resina Podophylli.

Preparation :—

Resina Podophylli.—Prepared by pouring a strong tincture of the rhizome in Rectified Spirit into Water acidulated with Hydrochloric Acid ; the resin is deposited.

Dose.—$\frac{1}{4}$ to 1 grain, in pill or in solution.

Note.—A solution of Resin of Podophyllum, 2 grains in 1 drachm of Rectified Spirit, is official under the name of Tinctura Podophylli.

***Rhei Radix** (Rhubarb Root).—The root more or less deprived of its bark, sliced and dried, of *Rheum palmatum*, *Rheum officinale*, and probably other species.

Characters.—In more or less cylindrical or irregularly shaped pieces ; outer surface covered with a yellowish powder ; hard, compact ; odour peculiar and somewhat aromatic ; taste bitter.

Composition.—The active purgative constituent is Cathartic Acid (also contained in Senna Leaves); the colour is due to Chrysophanic Acid ; it also contains Rheo-Tannic Acid, Calcium Oxalate, Chrysophan, and Emodin.

Dose.—3 to 10 grains for repeated administration ; 15 to 30 grains for single administration.

Preparations :—

(1) **Extractum Rhei.**—Rhubarb Root, and 60 per cent. Alcohol ; macerate the root in the Spirit and percolate till the root is exhausted. Evaporate the liquid to dryness.

Dose.—2 to 8 grains.

(2) **Infusum Rhei.**—Rhubarb Root, and boiling Water.

Dose.—$\frac{1}{2}$ to 1 ounce.

(3) **Pilula Rhei Composita.**—Rhubarb, Socotrine Aloes, Myrrh, Hard Soap, Oil of Peppermint, Syrup of Glucose.
Dose.—4 to 8 grains.

(4) **Pulvis Rhei Compositus** (Gregory's Powder).—Rhubarb, Light Magnesia, and Ginger.
Dose.—20 to 60 grains.

(5) **Syrupus Rhei.**—Rhubarb Root, and Coriander Fruit are mixed, and percolated with Rectified Spirit and Water; the liquid is concentrated by evaporation, and Sugar is dissolved in it.
Dose.—½ to 2 drachms.

(6) **Tinctura Rhei.**—Rhubarb Root, Cardamom Seeds, Coriander Fruit, Glycerine, and 60 per cent. Alcohol; percolate.
Dose.—½ to 1 drachm for repeated administration; 2 to 4 drachms for single administration.

(7) **Liquor Rhei Concentratus.**—Rhubarb Root, and 20 per cent. Alcohol; macerate and percolate.
Dose. ½ to 1 drachm.

***Senna Alexandrina** (Alexandrian Senna).—The leaflets of *Cassia acutifolia.*

***Senna Indica** (Indian Senna).—The leaflets of *Cassia angustifolia.*

Characters.—Lanceolate leaflets, acute at apex, unequal at base, margin entire; thin, yellowish green; odour peculiar, tea-like; taste nauseous.

Alexandrian Senna is brittle, and is usually somewhat broken; the leaflets rarely exceed an inch in length.

Indian Senna is usually whole, and the leaflets range from 1 to 2 inches in length.

Note.—Either kind may be used for making the preparations of Senna.

Composition.—The active principle is Cathartic Acid.

Dose.—10 to 30 grains, in powder.

Preparations :—

(1) **Confectio Sennæ.** — Senna, Figs, Coriander Fruit, Tamarinds, Cassia Pulp, Prunes, Extract of Liquorice, Sugar, and Water.

Dose.—1 to 2 drachms.

(2) **Infusum Sennæ.**—Senna, Ginger, and boiling Water.

Dose.—½ to 1 ounce, or more.

(3) **Mistura Sennæ Composita** (Black Draught).—Infusion of Senna, Magnesium Sulphate, Aromatic Spirit of Ammonia, Liquid Extract of Liquorice, and Compound Tincture of Cardamoms.

Dose.—1 to 2 ounces.

(4) **Pulvis Glycyrrhizæ Compositus** (Compound Liquorice Powder). — Senna, Liquorice Root, Fennel Fruit, Sublimed Sulphur, and Sugar.

Dose.—1 to 2 drachms.

(5) **Syrupus Sennæ.** — Senna, Oil of Coriander, Sugar, Alcohol, and Water.

Dose.—½ to 2 drachms.

(6) **Tinctura Sennæ.** — Senna, Raisins, Caraway Fruit, Coriander Fruit, and 45 per cent. Alcohol; macerate.

Dose.—½ to 1 drachm for repeated administration; 2 to 4 drachms for single administration.

(7) **Liquor Sennæ Concentratus.**—A strong infusion prepared by percolating Senna with Water, and adding Tincture of Ginger and Rectified Spirit.

Dose.—½ to 1 drachm.

***Camphora**.—A stearopten obtained from the wood of *Cinnamomum Camphora.*

Characters.—Solid translucent crystalline masses, with characteristic odour.

Solubility.—1 in 700 of Water; 1 in 1¼ of Rectified Spirit; 4 in 1 of Chloroform; 12 in 7 of Ether; 1 in 4 of Olive Oil; very soluble also in Oil of Turpentine and Glacial Acetic Acid.

Dose.—2 to 5 grains. Best made into pills with ⅓ its weight of Curd Soap and a few drops of 45 per cent. Alcohol.

Preparations:—

(1) **Aqua Camphoræ**.—A solution of Camphor in a little Rectified Spirit added to Water.
Dose.—1 to 2 ounces. (1 in 1000.)

(2) **Spiritus Camphoræ**.—A solution of Camphor in Rectified Spirit. (1 in 10.)
Dose.—5 to 20 minims, in milk.

(3) **Tinctura Camphoræ Composita**. (*Vide Opium.*)

(4) **Unguentum Hydrargyri Compositum**. (*Vide Hydrargyrum*).

(5) **Linimentum Camphoræ**.—A solution of Camphor in Olive Oil

(6) **Linimentum Camphoræ Ammoniatum**.—Camphor, Rectified Spirit, Strong Solution of Ammonia, and Oil of Lavender.

Note.—Camphor is also an ingredient in all the official Liniments, except those of Ammonia, Lime, Croton Oil, and Iodide of Potassium with Soap.

***Oleum Terebinthinæ** (Oil of Turpentine).—The oil distilled from the oleo-resin (turpentine) obtained from several Pines, rectified if necessary.

Characters.—Limpid, colourless, with a strong peculiar odour, and pungent taste.

Dose.—2 minims to 4 drachms, in capsules or suspended with Mucilage of Acacia.

Preparations:—

(1) **Linimentum Terebinthinæ.**—Oil of Turpentine, Soft Soap, Camphor, and Water.

(2) **Linimentum Terebinthinæ Aceticum.**—Oil of Turpentine, Glacial Acetic Acid, and Camphor Liniment.

*__Kino.__—The dried juice from the trunk of *Pterocarpus Marsupium.*

Characters.—In small angular glistening opaque reddish-black brittle fragments: odourless, very astringent, tinging the saliva blood-red when chewed.

Composition.—Consists chiefly of Kino-tannic Acid.

Incompatibles.—Mineral Acids, Alkalies, Metallic Salts and Gelatine.

Dose.—5 to 20 grains, in cachets.

Preparations:—

(1) **Pulvis Kino Compositus.** (*Vide Opium.*)

(2) **Tinctura Kino.**—Kino, Glycerine, Water, and Rectified Spirit.

Dose.—½ to 1 drachm.

(3) **Pulvis Catechu Compositus.** (*Vide Catechu*).

*__Catechu.__—A dry extract of the leaves and young shoots of *Uncaria Gambier.*

Characters.—In cubes, or masses of variable size formed of adhering cubes. The cubes are usually about an inch square on each side. Reddish-brown externally, pale cinnamon-brown internally ; odourless; taste first bitter and astringent, afterwards sweetish.

Composition.—Consists chiefly of Catechuic and Catechu-tannic Acids.

Incompatibles.—Alkalies, Metallic Salts and Gelatine.

Dose.—5 to 15 grains.

Preparations :—

(1) **Pulvis Catechu Compositus.**—Catechu, Kino, Rhatany Root, Cinnamon Bark, and Nutmeg.
Dose.—10 to 40 grains.

(2) **Tinctura Catechu.**—Catechu, Cinnamon, and 60 per cent. Alcohol ; macerate.
Dose.—½ to 1 drachm.

(3) **Trochiscus Catechu.**—Catechu, and Simple Lozenge Basis.
Dose.—1 to 6 Lozenges.

Hamamelidis Cortex et Folia.—The bark and leaves of *Hamamelis Virginiana* (Witch Hazel).

Dose.—Given only in preparations.

Preparations :—

(1) **Extractum Hamamelidis Liquidum.**—Hamamelis Leaves, and 45 per cent. Alcohol. (1 in 1.)
Dose.—5 to 15 minims.

(2) **Tinctura Hamamelidis.**—Hamamelis Bark, and 45 per cent. Alcohol. (1 in 10.)
Dose.—½ to 1 drachm.

(3) **Unguentum Hamamelidis.**—Liquid Extract of Hamamelis, and Hydrous Wool Fat.

(4) **Liquor Hamamelidis.**—Fresh Hamamelis Leaves, Water, and Rectified Spirit ; distil.
Dose.—None stated in the British Pharmacopœia ; ½ to 2 drachms given.

*__Acidum Tannicum__ (Tannic Acid).—An acid made by exposing powdered Oak Galls to a damp atmosphere, macerating with ether, and evaporating the ethereal liquid.

Characters.—Pale yellow vesicular masses or thin glistening scales, with a strongly astringent taste.

Solubility.—About 10 in 6 of Water and Spirit: 1 in 3 of Glycerine. (*Compare with Gallic Acid.*)

Incompatibles.—Ferric Salts; Mineral Acids, Alkalies. Salts of Antimony, Lead, and Silver; Alkaloids, and Gelatine.

Note.—It gives a bluish-black precipitate with Ferric Salts, and a flocculent precipitate with a solution of Gelatine. (*Compare with Acidum Gallicum*).

Dose.—2 to 5 grains.

Preparations:—

(1) **Glycerinum Acidi Tannici.**—Tannic Acid and Glycerine. (1 in 5.)
Dose.—10 to 20 minims.

(2) **Suppositoria Acidi Tannici.**—Tannic Acid, and Cocoa-butter. (3 grains in each.)

(3) **Trochiscus Acidi Tannici.**—Tannic Acid, and Fruit Lozenge Basis. (½ grain in each Lozenge.)
Dose.—1 to 6.

*__Acidum Gallicum__ (Gallic Acid).—An acid obtained by boiling powdered Oak Galls with diluted Sulphuric Acid; straining while hot, collecting and purifying the crystals which deposit on cooling.

Characters.—In acicular prisms or silky needles, sometimes nearly white, but usually of a pale fawn colour.

Solubility.—About 1 in 100 of Water; 1 in 8 of Rectified Spirit; 1 in 6 of Glycerine. (*Compare with Tannic Acid.*)

Incompatibles.—Alkalies; Mineral Salts; Spirit of Nitrous Ether.

Note—It gives a bluish-black precipitate with Ferric Salts, but does not precipitate solution of Gelatine. (*Compare with Acidum Tannicum.*)

Dose.—5 to 15 grains. 30 grains with 3 minims of Glycerine makes well into 6 pills.

Preparations.—None.

Acidum Benzoicum (Benzoic Acid).—An acid obtained from Benzoin by sublimation. It may also be obtained from Toluene, Hippuric Acid and other organic compounds.

Characters.—Light feathery crystalline plates and needles nearly colourless, with an agreeable *aromatic odour.* (The odour is characteristic of the acid obtained from Benzoin.)

Solubility.—1 in 390 of Water; 1 in 2¾ of Rectified Spirit.

Dose.—5 to 15 grains, in cachets.

Preparations:—

(1) Trochiscus Acidi Benzoici.—Benzoic Acid, and Fruit Lozenge Basis.
Dose.—1 to 5. (½ grain in each lozenge.)

(2) Tinctura Camphoræ Composita. } *Vide Opium.*
(3) Tinctura Opii Ammoniata. }

Acidum Tartaricum (Tartaric Acid).—An acid contained in grape-juice; usually obtained by treating Acid Potassium Tartrate with Chalk, and Calcium

Chloride, successively, and decomposing the resulting Calcium Tartrate with Sulphuric Acid.

Solubility.—10 in 8 of Water; 1 in 2½ of Rectified Spirit.

Dose.—5 to 20 grains.

Preparations:—

(1) Magnesii Sulphas Effervescens. (*See page* 32.)
(2) Sodii Citro-tartras ,, (*See page* 21.)
(3) Sodii Phosphas ,, (*See page* 24.)
(4) Sodii Sulphas ,, (*See page* 22.)
(5) Pulvis Sodæ Tartaratæ ,, (*See page* 21.)
(6) Caffeinæ Citras ,, (*See page* 84.)

Acidum Citricum (Citric Acid).—An acid obtained from lemon-, or lime-juice, by neutralizing it with Chalk, and treating the resulting Calcium Citrate with Sulphuric Acid.

Solubility.—10 in 6 of Water; 1 in 1½ of Spirit.

Dose.—5 to 20 grains. 1 of Citric Acid in 11 of Water is about the same strength as Lemon-juice.

Preparations:—

(1) Magnesii Sulphas Effervescens. (*See page* 32.)
(2) Sodii Citro-tartras ,, (*See page* 21.)
(3) Sodii Phosphas ,, (*See page* 24.)
(4) Sodii Sulphas ,, (*See page* 22.)
(5) Caffeinæ Citras ,, (*See page* 84.)

*__Copaiba__ (Copaiva).—An oleo-resin obtained from the trunk of *Copaifera Lansdorffii*, and other species of Copaifera.

Characters.—A viscid liquid usually transparent, but sometimes opalescent; colour light yellow to pale golden-brown; peculiar aromatic odour, persistent acrid taste.

Composition.—Consists of about 50 per cent. of Volatile Oil (see below), and about 50 per cent. of a Resin (Copaivic Acid).

Dose.—½ to 1 drachm, in capsules, or rubbed up with Mucilage of Acacia, or yolk of egg and Peppermint or Cinnamon Water.

Preparation:—

Oleum Copaibæ.—Obtained from Copaiba by distillation.

Dose.—5 to 20 minims, in same way as Copaiba.

***Cubebæ Fructus** (Cubebs).—The dried unripe full-grown fruit of *Piper Cubeba.*

Characters.—In appearance and size resembling an ordinary peppercorn, but with a short stalk; odour strong, peculiar, and aromatic; taste warm and somewhat bitter.

Composition.—A Volatile Oil (see below), and a Resin (Cubebic Acid).

Dose.—½ to 1 drachm, in cachets, or as a confection with Syrup of Ginger.

Preparations:—

(1) **Oleum Cubebæ.**—From Cubebs by distillation.

Dose.—5 to 20 minims, in Capsules, or with Mucilage.

(2) **Tinctura Cubebæ.**—Cubebs, and Rectified Spirit; percolate.

Dose.—½ to 1 drachm.

***Colchici Cormus** (Colchicum Corms).—The fresh, and also the dried, corms of *Colchicum autumnale* collected about the end of June.

Characters.—Dried slices about ⅛ inch thick, yellowish at the circumference, indented at one side, convex at the other, forming a somewhat kidney-shaped outline; surfaces firm and white.

Composition.—The active principle is the alkaloid Colchicine.

Dose.—2 to 5 grains, in powder.

Preparations :—

(1) **Extractum Colchici.**—A "fresh extract" (*see page* 4) from the juice of the fresh Corms.
Dose.—¼ to 1 grain.

(2) **Vinum Colchici.**—Dried Colchicum Corms, and Sherry; macerate. (1 in 5.)
Dose.—10 to 30 minims.

Colchici Semina.—The dried fully ripe seeds of *Colchicum autumnale.*

Composition.—Same as Colchici Cormus.

Dose.—Given only as Tincture.

Preparation :—

Tinctura Colchici Seminum.—Colchicum Seeds, and 45 per cent. Alcohol; percolate. (1 in 5.)
Dose.—5 to 15 minims.

***Scilla** (Squill).—The sliced and dried bulb of *Urginea Scilla.*

Characters.—Crescentric yellowish-white or pinkish slices, 1 to 2 inches long; translucent; odourless; bitter taste; usually tough and flexible, but brittle if quite dry.

Composition.—The glucosides, Scillitoxin (or Scillain), and Scillipicrin.

Dose.—1 to 3 grains, in powder.

Preparations :—

(1) **Acetum Scillæ.**—Squill, and Dilute Acetic Acid; macerate. (1 in 8.)
Dose.—10 to 30 minims.

(2) **Oxymel Scillæ.**—Squill, Water, Acetic Acid, and Honey.
Dose.—½ to 1 drachm.

(3) **Pilula Ipecacuanhæ cum Scilla.**—(*Vide Opium.*)

(4) **Pilula Scillæ Composita.**—Squill, Ginger, Ammoniacum, Hard Soap, and Syrup of Glucose.
Dose.—4 to 8 grains. (1 in 4.)

(5) **Syrupus Scillæ.**—Vinegar of Squill, and Sugar.
Dose.—½ to 1 drachm.

(6) **Tinctura Scillæ.**—Squill, and 60 per cent. Alcohol; macerate. (1 in 5.)
Dose.—5 to 15 minims.

***Santoninum** (Santonin).—A neutral principle obtained from the un-expanded flower-heads of *Artemisia maritima*, by (1) boiling them with water and Lime; (2) concentrating the strained liquid and acidulating with Hydrochloric Acid to precipitate the Santonin; (3) purifying the product.

Characters.—Colourless, flat, rhombic prisms, becoming yellow when exposed to light; odourless, but with feebly bitter taste. (*Compare with Strychnina.*)

Solubility.—Almost insoluble in Water; 1 in 40 of Rectified Spirit.

Dose.—2 to 5 grains, in powder.

Preparation :—

Trochiscus Santonini.—Santonin, and Simple Lozenge Basis. (1 grain in each lozenge.)
Dose.—1 to 5.

***Filix Mas** (Male Fern).—The rhizome, or root-stock of *Aspidium Filix-mas*, collected late in autumn, and dried.

Characters.—3 to 6 inches long, entirely covered by the hard persistent curved angular dark brown bases of the stalks. Odour feeble but disagreeable; taste nauseous.

Composition.—Filicic Acid: a fixed and a volatile oil.

Dose.—Given only as the Liquid Extract.

Preparation:—

Extractum Filicis Liquidum.—By evaporating an ethereal tincture of the Rhizome.

Dose.—45 to 90 minims, in Mucilage, or in Capsule.

***Ergota** (Ergot of Rye).—The sclerotium (compact *mycelium or spawn*) of *Claviceps purpurea*, produced between the pales and replacing the grain of the common Rye.

Characters.—Somewhat cylindrical, tapering at the ends, curved; ½ to 1½ inches long; violet-purple externally, whitish within; brittle; odour peculiar and disagreeable; taste mawkish and rancid.

Composition.—The alkaloids, Ergotinine and Cornutine, and Sclerotic Acid.

Dose.—20 to 60 grains.

Preparations:—

(1) **Extractum Ergotæ** (Ergotin).—Ergot is percolated till exhausted with 60 per cent. Alcohol; the resulting tincture is evaporated to a small bulk, diluted with an equal volume of Water, filtered, acidulated with Diluted Hydrochloric Acid, set aside for 24 hours, and again filtered.

The acid liquid is then neutralized with Sodium Carbonate, and evaporated to a soft extract.

Dose.—2 to 8 grains, in pill with powdered Liquorice.

(2) **Extractum Ergotæ Liquidum.**—By evaporating an aqueous infusion of Ergot and adding Rectified Spirit. (1 of Liquid Extr. = 1 of Ergot.)

Dose.—10 to 30 minims, or more.

(3) **Injectio Ergotæ Hypodermica.**—Extract of Ergot, Phenol and Water. (about 1 in 3.)

Dose.—3 to 10 minims, by subcutaneous injection.

Note.—Should be freshly prepared.

(4) **Infusum Ergotæ.**—Ergot, and boiling Water.

Dose.—1 to 2 ounces. (1 in 20.)

(5) **Tinctura Ergotæ Ammoniata.**—Ergot, 60 per cent. Alcohol and Solution of Ammonia; percolate. (1 in 4.)

Dose.—½ to 1 drachm.

ORGANIC MATERIA MEDICA.

PART III.

ANIMAL SUBSTANCES.

*Substances marked * have to be recognised.*

***Oleum Morrhuæ** (Cod Liver Oil).—The oil extracted from the fresh liver of the cod, *Gadus Morrhua*, by the application of a heat not exceeding 180° F.; and from which solid fat has been separated by filtration at about 23° F.

Characters.—Pale yellow, with a slight fishy odour and taste.

Composition.—Oleic, Palmitic and Stearic Acid combined with Glyceryl, and in a free state; traces of Iodine, Bromine, Phosphorus, and Tri-methylamine. Two alkaloids Morrhuine and Aselline have also been obtained from the oil.

Dose.—1 to 4 drachms.

Preparations.—None.

***Cantharis** (Cantharides; Spanish Fly).—The dried beetle, *Cantharis vesicatoria.*

Characters.—$\frac{3}{4}$ to 1 inch long, $\frac{1}{4}$ inch broad: shining coppery-green colour; odour strong and disagreeable.

Composition.—The active principle is a crystalline body, called Cantharidin.

Dose.—Given only as Tincture.

Preparations :—

(1) **Acetum Cantharidis.**—Cantharides, Glacial Acetic Acid, and Water; macerate and percolate. (1 in 10.)

(2) **Liquor Epispasticus** (Blistering Fluid).—Cantharides, and Acetic Ether; percolate. (1 in 2.)

(3) **Collodium Vesicans** (Blistering Collodion).—Pyroxylin dissolved in Blistering Fluid.

(4) **Emplastrum Calefaciens** (Warm Plaster).—Cantharides, Yellow Wax, Resin, Soap Plaster and Resin Plaster. (1 in 25.)

(5) **Emplastrum Cantharidis** (Blistering Plaster).—Cantharides, Yellow Wax, Resin, Soap Plaster, and prepared Lard. (1 in 3.)

(6) **Tinctura Cantharidis.**—Cantharides, and Rectified Spirit; macerate. (1 in 80.)
Dose.—5 to 15 minims; or 2 to 5 minims if frequently repeated.

(7) **Unguentum Cantharidis.**—Cantharides, and Benzoated Lard. The Benzoated Lard is digested with the Cantharides at 120° F. for twelve hours, strained, and the product stirred till cold. (1 in 10.)

ADDITIONS REQUIRED FOR THE L.S.A. LOND.

*Substances marked * have to be recognised.*

INORGANIC SUBSTANCES.

Acidum Phosphoricum Concentratum.—Obtained by oxidizing Phosphorus with very dilute Nitric Acid, and concentrating the solution to a Sp. Gr. of 1.5.

Dose.—Only given in diluted form.

Preparations :—

(1) **Acidum Phosphoricum Dilutum.**—Concentrated Phosphoric Acid and Water. (1 in 7 nearly.)
Dose.—5 to 20 minims, further diluted.

(2) **Syrupus Ferri Phosphatis.** (*See page* 46.)

Liquor Chlori.—A solution of 2 volumes of chlorine in 1 volume of water.

Dose.—10 to 20 minims well diluted with water.

Incompatibles.—All Iodides and Bromides ; all salts of Lead and Silver.

Preparations.—None.

Note.—This solution is not now among the medicinal preparations, but is classed with the Test Solutions in the Appendix to the British Pharmacopœia.

Bromum (Bromine).—A dark brownish-red, volatile liquid element obtained from sea-water, and from some saline springs.

It is not given internally.

Used in the preparation of,

Acidum Hydrobromicum Dilutum.
Potassii Bromidum.
Sodii Bromidum.

*__Carbo Ligni__ (Wood Charcoal).—Wood charred by exposure to a red heat without access of air.

Characters.—A black powder without taste or odour, free from gritty matter. Insoluble in all liquids.

Dose.—20 to 60 grains.

Preparations.—None.

ORGANIC SUBSTANCES.

*__Araroba__ (Goa Powder; Crude Chrysarobin).—A substance found in cavities in the trunk of *Andira Araroba*, freed from fragments of wood, and powdered.

Characters.—A light powder; varies in colour from brownish-yellow to umber-brown. Hot Chloroform dissolves not less than 50 per cent. of the powder, and the solution on evaporation yields a crystalline yellow powder, without odour or taste, called Chrysarobin.

Dose.—Not given internally.

Preparation:—

Chrysarobinum.—Prepared by extracting Araroba with hot Chloroform as described above. From it is prepared,

Unguentum Chrysarobini.—Chrysarobin and Benzoated Lard; melt together till dissolved and stir till cold. (1 in 25.)

Paraffinum Durum (Hard Paraffin, Paraffin Wax).—A mixture of several of the harder members of the paraffin series of hydrocarbons, usually obtained by distillation from shale. It melts between 130° F. and 135° F.

Preparation :—

Unguentum Paraffini.—Hard Paraffin and Soft Paraffin ; melt and stir till cold.

Paraffinum Molle (Soft Paraffin ; Petrolatum).—A semi-solid mixture containing some of the softer or more fluid members of the paraffin series of hydrocarbons ; usually obtained by purifying the less volatile portions of petroleum. It is known in commerce by various fanciful names. Melts at 96° F. to 102° F. Vaseline is a similar product. There is a yellow and a white variety. They are used for the preparation of Yellow and White Paraffin Ointments respectively.

***Scammoniæ Radix** (Scammony Root).—The dried root of *Convolvulus Scammonia.*

Characters.—Cylindrical, of various lengths and sizes ; shrivelled, furrowed longitudinally : greyish-brown externally, whitish internally ; faint odour and taste resembling Jalap

Composition.—The active principle is Jalapin.

Preparations :—

Scammoniæ Resina.—By process similar to that for Jalapæ Resina. (*Vide Jalapa.*)

Dose.—3 to 8 grains.

From Resin of Scammony are prepared:—

(1) **Pulvis Scammonii Composita.**—(*See page* 109.)

(2) **Pilula Scammonii Composita.**—(Resins of Scammony and of Jalap, Curd Soap, and Tincture of Ginger.

Dose.—4 to 8 grains.

(3) **Extractum Colocynthidis Compositum.**
(4) **Pilula Colocynthidis Composita.** } (*See page* 107.)

***Benzoinum.**—A balsamic resin obtained from *Styrax Benzoin*, and probably other species of Styrax.

Characters.—In flat or curved tears rarely exceeding 2 inches in length, yellowish or reddish-brown externally, milky white internally; or in masses composed of tears more or less closely agglutinated by a reddish-brown translucent, or greyish-brown opaque resinous substance. Has an agreeable aromatic odour; easily broken, and gives off fumes of Benzoic Acid when heated. Dissolves readily in Rectified Spirit and in Ether.

Preparations:—

(1) **Adeps Benzoatus** (Benzoated Lard).—Prepared Lard and Benzoin; heat together in a water bath for 2 hours and strain.

(2) **Tinctura Benzoini Composita** (Friar's Balsam).—Benzoin, Prepared Storax, Balsam of Tolu, Socotrine Aloes and Rectified Spirit; dissolve and filter.

Dose.—½ to 1 drachm, with Mucilage of Acacia.

THE FOLLOWING SUBSTANCES (DESCRIBED ELSEWHERE) HAVE TO BE RECOGNISED.

Characters.

***Potassii Chloras.**—Colourless rhomboidal crystalline plates, with a cool saline taste.

***Potassii Sulphas.**—Colourless hard six-sided prisms, terminated by six-sided pyramids.

***Potassii Tartras Acidus.**—A gritty white powder, or fragments of cakes crystallized on one surface; of a pleasant acid taste.

***Sodii Sulphas.**—Transparent oblique prisms, with a salt and bitter taste; effloresces on exposure to air.

***Borax.**—Transparent colourless crystals, sometimes slightly effloresced.

***Plumbi Iodidum.**—A moderately heavy *crystalline* bright yellow powder.

***Antimonii Tartaratum.**—Colourless transparent crystals, with triangular facets. Decrepitates and blackens when heated.

***Hydrargyrum Ammoniatum.**—An opaque white powder, not very heavy, having a tendency to adhere, and so forming irregular lumps. Warmed with Solution of Potash it evolves Ammonia. When heated it entirely volatilizes without melting.

***Ferri Sulphas Exsiccatus.**—A light greyish-brown powder.

***Amyl Nitris.**—An ethereal liquid of yellowish colour, and peculiar, not disagreeable odour.

***Conii Folia.**—More or less divided feathery leaves, much shrivelled when dried.

***Oleum Ricini.**—Viscid, colourless or pale straw-yellow, with scarcely any odour, but acrid, unpleasant taste.

***Cascara Sagrada.**—In quills or incurved pieces, varying in length and size, smooth externally and covered with a greyish-white layer which is easily removed ; internally reddish-brown, nearly smooth ; taste bitter.

***Podophylli Rhizoma.**—Variable in length, from $\frac{1}{5}$ to $\frac{1}{3}$ inch thick; cylindrical, though somewhat flattened ; with large irregular tuberosities at intervals, which are marked above by a depressed circular scar, and below by rootlets or the scars of them; externally dark reddish-brown, internally white and mealy. Odour faintly narcotic ; taste, bitter and nauseous.

***Scammoniæ Resina.**—In brownish translucent pieces, brittle, resinous in fracture, and of a sweet fragrant odour.

POSOLOGY.

Doses of Official Preparations.

The following generalizations, which although not strictly accurate are sufficiently so for most purposes, will be found useful in learning the usual doses.

Dilute Acids.—	*Dose*, 5 to 20 minims.	
	Except, Acid. Hydrocyanicum Dil.	2 to 6 minims.
	Acid. Aceticum Dil.	½ to 2 drachms.
Confections.—	*Dose*, 1 to 2 drachms.	
Decoctions.—	*Dose*, ½ to 2 ounces.	
Extracts.—	*Dose*, 2 to 8 grains.	
	Except, Extr. Physostigmatis	¼ to 1 grain.
	,, Belladonnæ Alcoholicum	
	,, Stramonii	
	,, Aconiti	
	,, Belladonnæ Viride	
	,, Cannabis Indicæ	
	,, Nucis Vomicæ	
	,, Colchici	
	,, Opii	
	,, Euonymii Siccum	1 to 2 grains.
	,, Aloes Barbadensis	1 to 4 grains.
Liquid Extracts.	*Dose*, 5 to 15 minims.	
	Except, Extr. Ipecacuanhæ Liquidum	½ to 2 minims.
	,, Nucis Vomicæ Liquidum	1 to 3 minims.
	,, Cascaræ Sagradæ Liquidum	½ to 1 drachm.
	,, Cocæ Liquidum	
	,, Glycyrrhizæ Liquidum	
	,, Filicis Liquidum	½ to 2 drachms.
	,, Pareiræ Liquidum	
	,, Taraxaci Liquidum	
	,, Sarzæ Liquidum	2 to 4 drachms.

Infusions.—	*Dose*, ½ to 1 ounce.	
	Except, Infusum Digitalis	2 to 4 drachms.
Juices.—	*Dose*, ½ to 1 drachm.	
	Except, Succus Belladonnæ	5 to 15 minims.
Liquors.—	*Doses*, very various.	
Mixtures.—	*Dose*, ½ to 1 ounce.	
	Except, Mistura Sennæ Composita	1 to 2 ounces.
Pills.—	*Dose*, 4 to 8 grains.	
	Except, Pil. Phosphori	1 to 2 grains.
	,, Plumbi cum Opio	2 to 4 grains.
	,, Saponis Composita	
	,, Ferri	5 to 15 grains.
Compound Powders.—	*Dose*, 10 to 40 grains.	
	Except, Pulvis Antimonialis	1 to 5 grains.
	,, Elaterini Compositus	
	,, Opii Compositus	2 to 10 grains.
	,, Ipecacuanhæ Compositus	5 to 20 grains.
	,, Kino Compositus	
	,, Scammonii Compositus	
Spirits.—	*Dose*, 5 to 20 minims.	
	Except, Spiritus Ætheris	½ to 1 drachm.
	,, ,, Nitrosi	
	,, Ammoniæ Aromaticus	
	,, Ammoniæ Fetidus	
	,, Armoraciæ Compositus	
	,, Juniperis	
Syrups.—	*Dose*, ½ to 1 drachm.	
Tinctures.—	*Dose*, ½ to 1 drachm.	
	Except, Tinctura Iodi	2 to 5 minims.
	,, Aconiti	5 to 15 minims.
	,, Belladonnæ	
	,, Cannabis Indicæ	
	,, Cantharidis	
	,, Capsici	
	,, Chloroformi et Morphinæ Composita	

Tinctures.—*Except*, Tinctura Colchici Seminum
,, Digitalis
,, Ferri Perchloridi
,, Gelsemii
,, Lobeliæ Ætherea
,, Nucis Vomicæ
,, Opii
,, Podophylli
,, Scillæ
,, Stramonii
,, Strophanthi
} 5 to 15 minims.

Lozenges.—*Dose*, 1 to 6 lozenges.

Vinegars.—*Dose*, 10 to 30 minims.
Except, Acetum Cantharidis, not given internally.

Waters.—*Dose*, ½ to 2 ounces.
Except, Aqua Laurocerasi ½ to 2 drachms.

Wines.—*Dose*, 10 to 30 minims.
Except, Vinum Ferri
,, Ferri Citratis
} 1 to 4 drachms.
,, Quininæ ½ to 1 ounce.

Table of *maximum* doses of some important substances not included in the above list. The *minimum* dose may be taken at a quarter of the maximum dose.

$\frac{1}{600}$ grain.

Aconitina.

$\frac{1}{100}$ grain.

Atropina.
Atropinæ Sulphas.
Hyoscinæ Hydrobromidum.
Hyoscyaminæ Sulphas.

$\frac{1}{20}$ grain.

Homatropinæ Hydrobromidum.
Phosphorus.
Physostigminæ Sulphas.
Picrotoxinum.

$\frac{1}{15}$ grain.

Acidum Arseniosum.
Hydrargyri Iodidum Rubrum.
,, Perchloridum.
Strychnina.
Strychninæ Hydrochloridum.

$\frac{1}{8}$ grain.

Antimonium Tartaratum, as a diaphoretic.
Sodii Arsenas.

$\frac{1}{4}$ grain.

Apomorphinæ Hydrobromidum.
Arsenii Iodidum ($\frac{1}{5}$ grain).
Ferri Arsenas.
Iodum.

½ grain.

Argenti Nitras.
Cocainæ Hydrochloridum.
Elaterium.
Morphinæ Acetas.
,, Hydrochloridum.
,, Tartras.
Pilocarpinæ Nitras.

1 grain, or 1 minim.

Amyl Nitris, by mouth.
Calx Sulphurata.
Hydrargyri Oxidum Rubrum.
,, ,, Flavum.
Liquor Atropinæ Sulphatis.
Oleum Crotonis.
Resina Podophylli.

2 grains, or 2 minims.

Aloinum.
Antimonium Tartaratum, as an emetic.
Codeina.
Codeinæ Phosphas.
Cupri Sulphas, as an astringent.
Digitalis Folia.
Glusidum.
Ipecacuanha, as an expectorant.
Liquor Trinitrini.
Opium.
Sodii Nitris.

3 grains, or 3 minims.

Acetanilidum (Antifebrin).
Acidum Carbolicum.
Ferri Sulphas Exsiccatum.
Iodoformum.
Scilla.
Potassii Permanganas.
Zinci Sulphas, as a tonic.

5 grains, or 5 minims.

Acidum Tannicum.
Aloes Barbadensis.

5 grains, or 5 minims (*continued*).

Aloes Socotrina.
Amyl Nitris, by inhalation.
Caffeina.
Camphora.
Chloroformum.
Colchici Cormus.
Creosotum.
Ferri Sulphas.
Ferrum Redactum.
Hydrargyri Subchloridum.
Hydrargyrum cum Creta.
Injectio Cocainæ Hypodermica.
,, Morphinæ Hypodermica.
Jalapæ Resina.
Oleum Phosphoratum.
Plumbi Acetas.
Santoninum.

8 grains, or 8 minims.

Colocynthidis Pulpa.
Conii Folia.
Liquor Arsenicalis.
,, Arsenici Hydrochloricus.
,, Sodii Arsenatis.
,, Strychninæ Hydrochloridi.
Potassa Sulphurata.
Resina Scammoniæ.

10 grains, or 10 minims.

Alumen.
Ammonii Carbonas.
Beta-Naphthol.
Caffeinæ Citras.
Calcii Hypophosphis.
Cupri Sulphas, as an emetic.
Ferri et Ammonii Citras.
,, Phosphas.
,, et Quininæ Citras.
Ferrum Tartaratum.
Injectio Apomorphinæ Hypodermica.
Injectio Ergotæ Hypodermica.

10 grains, or 10 minims (*continued*).

Phenacetinum.
Quininæ Hydrochloridum.
,, Sulphas.
Sodii Hypophosphis.
Thyroideum Siccum.
Zinci Oxidum.

15 grains, or 15 minims.

Acidum Benzoicum.
,, Boricum.
,, Gallicum.
Ammoniacum.
Asafœtida.
Calcii Phosphas.
Catechu.
Guaiaci Resina.
Liquor Ferri Acetatis.
,, ,, Perchloridi.
,, ,, Pernitratis.
,, Thyroidei.
Potassii Chloras.
Salol.

20 grains, or 20 minims.

Acidum Citricum.
,, Salicylicum.
,, Sulphuricum Aromaticum.
,, Tartaricum.
Ammonii Chloridum.
Bismuthi Carbonas.
,, Salicylas.
,, Subnitras.
Borax.
Butyl-Chloral Hydras.
Calumbæ Radix.
Chloral Hydras.
Jalapa.
Kino.
Liquor Arsenii et Hydrargyri Iodidi.
Liquor Chlori.

20 grains, or 20 minims (*continued*).

Liquor Sodæ Chlorinatæ.
Oleum Copaibæ.
Phenazonum (Antipyrine).
Potassii Iodidum.
Rhei Radix.
Salicinum.
Sodii Iodidum.

30 grains, or 30 minims.

Ammonii Bromidum.
Ferri Carbonas Saccharatus.
Ipecacuanha, as an emetic.
Liquor Potassæ.
Myrrha.
Potassii Bromidum.
,, Bicarbonas.
Senna Folia.
Sodii Benzoas.
,, Bicarbonas.
,, Bromidum.
,, Salicylas.
Sulphonal.
Zinci Sulphas, as an emetic.

40 grains, or 40 minims.

Potassii Sulphas.

1 drachm.

Calcii Carbonas Præcipitatus.
Cinchonæ Rubræ Cortex.
Copaiba.
Creta Præparata.
Cubebæ Fructus.
Ergota.
Ether.
Jaborandi.
Liquor Bismuthi et Ammonii Citratis.
,, Calcis Saccharatus.
,, Hydrargyri Perchloridi.
,, Morphinæ Acetatis.
,, ,, Hydrochloridi.
,, ,, Tartratis.

1 drachm (*continued*).

Magnesii Carbonas.
Magnesia Levis et Ponderosa.
Oxymel Scillæ.
Potassii Tartras Acidus.

2 drachms.

Carbo Ligni.
Cocæ Folia.
Glycerinum.
Paraldehydum.
Sodii Citro-Tartras Effervescens.

4 drachms.

Liquor Ammonii Acetatis.
,, Potassii Permanganatis.

4 drachms (*continued.*)

Magnesii Sulphas.
Oleum Morrhuæ.
,, Terebinthinæ.
Sodii Phosphas.
,, ,, Effervescens.
,, Sulphas.
,, ,, Effervescens.

1 ounce.

Magnesii Sulphas Effervescens.
Oleum Ricini.

4 ounces.

Liquor Calcis.

Table for the Reduction of Doses according to Age.

1 year	requires	$\frac{1}{12}$	of	adult	dose.
2 years	,,	$\frac{1}{8}$	,,	,,	,,
3 ,,	,,	$\frac{1}{6}$	,,	,,	,,
4 ,,	,,	$\frac{1}{4}$	,,	,,	,,
7 ,,	,,	$\frac{1}{3}$	,,	,,	,,
14 ,,	,,	$\frac{1}{2}$	,,	,,	,,
20 ,,	,,	$\frac{2}{3}$	,,	,,	,,
21 to 60 years,	,,	the adult dose.			

Over 60 years, reduce the dose in inverse proportion.

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